AUSTRO-HUNGARIAN BATTLESHIPS 1914–18

RYAN NOPPEN

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NEW VANGUARD 193

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AUSTRO-HUNGARIAN BATTLESHIPS 1914–18

INTRODUCTION

The Battle of Lissa on July 20, 1866, in which Austrian Admiral Wilhelm von Tegetthoff won a decisive naval victory over a numerically superior Italian foe, is typically celebrated as the greatest maritime event in the history of the Habsburg Empire, but ironically it also marked the beginning of some of the most stagnant years in the history of the Kaiserlich Königlich (k.k.) Kriegs-Marine (known as the Kaiserliche und Königliche [k.u.k.] Kriegsmarine after 23 October 1889). When peace was made with Italy on October 3, 1866, official interest in Habsburg naval power rapidly waned. One of the principal reasons for this was the establishment of the dual monarchy of Austria-Hungary in 1867, which gave a Hungarian parliament in Budapest an equal say in the governing of the empire. Since the Hungarian half of the empire had minimal manufacturing capability and little interest in overseas trade, the Hungarian parliament almost always refused to grant new funds for imperial naval construction and expansion. The cause of naval expansion took another serious blow in 1882 when, politically, Italy was no longer seen as a potential naval rival after the Triple Alliance between Germany, Austria- Hungary, and Italy was formed. With no prospect of naval war on the horizon and Hungarian refusal to maintain a modern fleet, which it considered unnecessary and not pertinent to Hungarian interests, the k.k. Kriegs-Marine languished with a motley collection of old casemate battleships and only a sliver of the empire's annual defense budget.

Kaiser Wilhelm II and Archduke Franz Ferdinand. Like the German Kaiser, Franz Ferdinand was keen to expand Austria-Hungary's navy and was one of its strongest supporters in the years leading up to World War I. (Author's collection)

The lack of funding pushed the Austrian naval leadership, particularly Admiral Maximilian Daublebsky von Sterneck, to pursue a minimal fleet program of smaller torpedo vessels inspired by the Jeune École. As the captain of Tegetthoff's flagship at the Battle of Lissa, Sterneck also clung to the idea that ramming a more powerful opponent was

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still a viable combat tactic. As the theories of the Jeune École were laid to rest by the increasing size and more effective guns of the first modern battleships, the k..k. Kriegs-Marine found itself woefully outclassed compared to other navies. Even the veterans of Lissa came to realize that the future of naval combat lay with the long-range naval rifle instead of the ram bow. Under the tenures of Admiral Hermann von Spaun and Admiral Rudolf Graf von Montecuccoli degli Erri, and with the backing of the naval-minded heir to the throne, Archduke Franz Ferdinand, the k.k. Kriegs-Marine experienced, in its own unique way, a modern naval renaissance beginning at the turn of the century. Influenced by the theories of Alfred Thayer Mahan and the concept of a "fleet-in-being," these leaders realized that a fleet made up of modern battleships was necessary to protect not just the hundreds of miles of coastline of the empire but also the growing domestic maritime industries and overseas commerce against the increasing threat of Italian irredentism. By the beginning of World War I, despite intense domestic political opposition, draconian budget limitations, and the use of extralegal means, the k.u.k. Kriegsmarine possessed a compact but powerful force of modern battleships.

The launch of the Monarch-class battleship *Budapest* at STT's San Rocco yard near Muggia on April 27, 1896. In less than two decades the k.u.k. Kriegsmarine would possess battleships almost four times larger.

MONARCH CLASS

As the navies of the world's Great Powers gradually accepted as standard the pre-dreadnought configuration for their battleships throughout the 1890s, even Admiral Sterneck felt compelled to compromise his adherence to the Jeune École and the strategies of Lissa, and follow international developments. In 1892 he requested funds for the construction of a class of three identical coastal defense battleships. The designer of the resulting Monarch class was Generalschiffbauingenieur Siegfried Popper, who would design all of the Austro-Hungarian battleships and dreadnoughts that served in World War I. After studying engineering at universities in Prague and Karlsruhe, Popper joined the k.k. Kriegs-Marine in 1869 as an assistant engineer and eventually worked his way up into the design and construction department. In 1907 he retired as head of the 1st Department of the Navy Technology Committee. His first experience was supervising the construction of the torpedo cruisers *Panther* and *Leopard*, built by Armstrong Mitchell & Company in Great Britain, but he was eventually called upon to prepare designs for a new class of coastal defense ships. For the rest of his career, Popper faced the arduous task of trying to design powerful battleships under what were probably the most strictly limited budgets enforced upon a navy by any of the Great Powers. He would design five different battleship classes under these conditions over the course of two decades.

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The Monarch class battleship *Wien* entering Portsmouth on June 14, 1897, to take part in the international jubilee review commemorating the 60th year of the reign of the British Queen Victoria. Note the low freeboard giving the ship a monitor-like appearance.

The Monarchs somewhat resembled monitors with their low freeboard but this was offset by the large superstructure between the primary turrets. They were also the first Austro-Hungarian battleships to have enclosed primary gun turrets. The first of the class, SMS *Wien*, was laid down at the Trieste shipyard of Stabilimento Tecnico Triestino (STT) on February 16, 1893, followed there by SMS *Monarch* on July 31. SMS *Budapest* was laid down at the Pola Navy Yard on February 16, 1893. *Wien* was commissioned on May 13, 1897, followed by *Monarch* on May 11, 1898, and *Budapes*t on May 12, 1898. The Monarchs had a displacement of 5,547 metric tons. They were 97.7m long at the waterline, 17m wide at the beam, and had a maximum draft of 6.4m. Ship's complement was 26 officers and 397 ratings.

Armament

The big gun selected for the main turrets of the Monarch class was the 24cm Krupp L/40 C/94 gun, designed in 1894. Two were mounted within the fore and aft main turrets and had an elevation range of -4° to +25°. With skilled crews, each gun could fire a round every three to four minutes. Every gun had its own manually operated ammunition hoist and the shells were pushed into the run with a pneumatically powered rammer. Each of the main turrets required a crew of 20 sailors, and each ship could carry a total of 160

A

SMS *BUDAPEST*

The Monarch class was Siegfried Popper's first foray into creating as powerful a ship as possible within the confines of a very limited budget and the dimensions of existing shipbuilding facilities. It was probable that he was heavily influenced by the design of Great Britain's Royal Sovereign-class battleships, the first true pre-dreadnought battleships. He came into contact with Sir William White, the designer of this class when he visited Great Britain in 1884–1885 to supervise the construction of the torpedo cruisers *Panther* and *Leopard*. Laid down one year after the first of the Royal Sovereigns was launched, the ships of the Monarch class appeared as scaled-down versions of the British battleships, with only one-third the displacement but with a balanced and powerful armament, a higher speed, and roughly two-thirds the complement. The Monarchs may have had fewer guns, lesser armor protection, and less space for the crew as the Royal Sovereigns, but they showed that Popper had the engineering aptitude to design as powerful a ship as he could with the restricted requirements he was forced to adhere to. They were also the first Austro-Hungarian battleships to be built as a class, finally breaking the k.u.k. Kriegsmarine's previous tendency of ordering one-off examples of different battleship designs. Here is SMS *Budapest* in the wartime paint scheme (referred to by some scholars as "Hausian Blue") given to Austro-Hungarian battleships. The remaining battleship color plates show the ships in their 1914–1915 wartime paint scheme.

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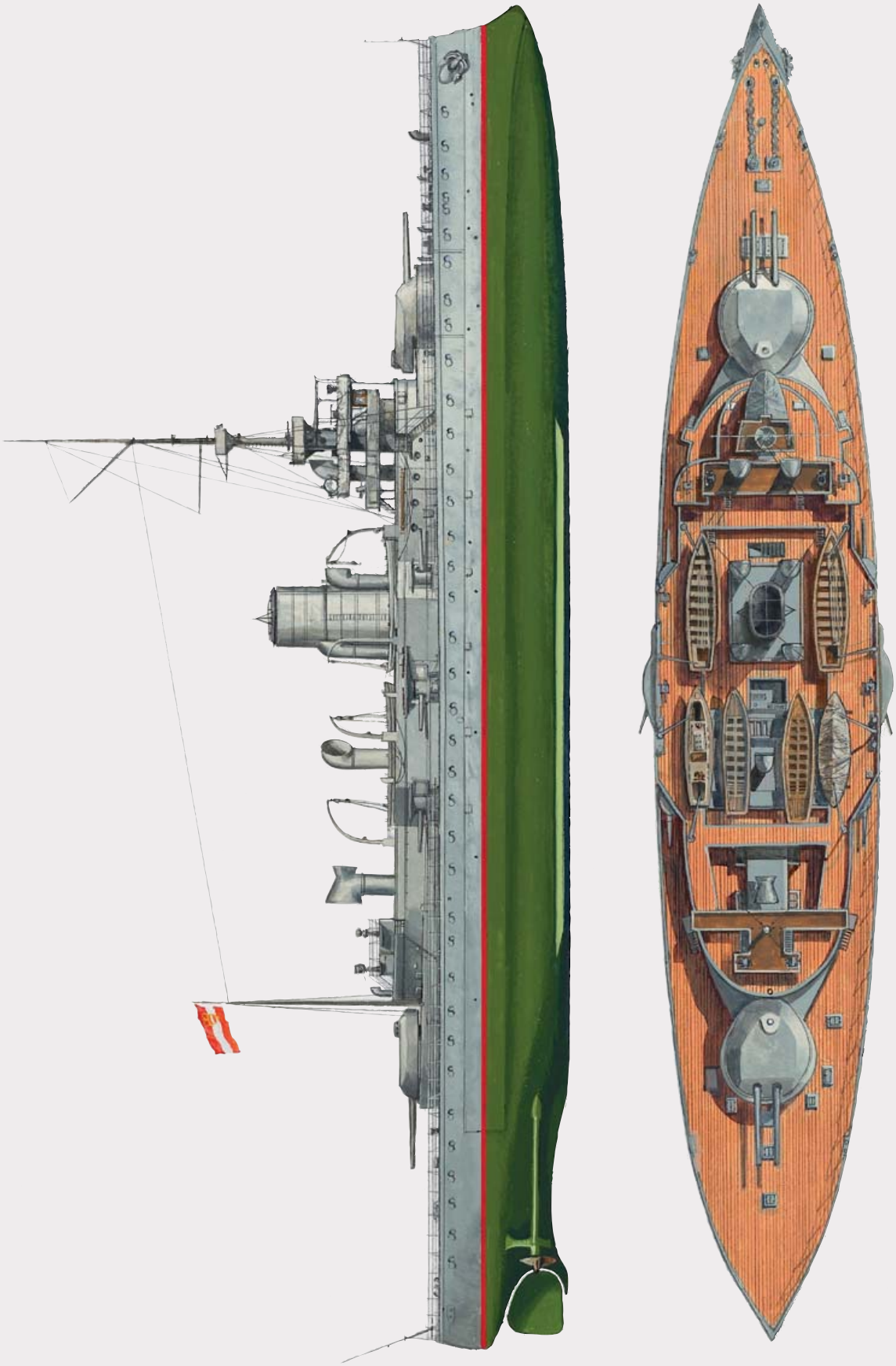

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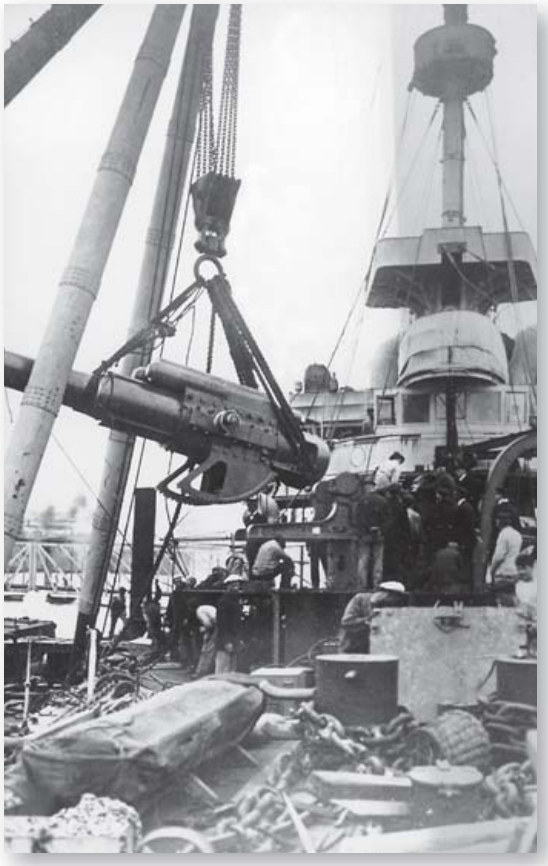

During the spring of 1918, *Budapest* was reactivated and had its forward primary turret removed. A 38cm Škoda L/17 howitzer was mounted in its place with the intent that the *Budapest* would serve as a mobile coastal battery. After firing tests showed that only 20 percent accuracy could be achieved due to the ship's roll after firing, the project was cancelled and the howitzer later removed.

24cm high-explosive and 160 24cm armor-piercing shells. As Krupp cemented steel plate came to replace Harvey steel plate, the armor-piercing capabilities of these guns were much reduced. From 10,000m only 12cm of Krupp cemented plate could be penetrated as opposed to 18cm of Harvey plate from the same distance. This limited the Monarchs to primarily shore bombardment operations during World War I.

Secondary armament consisted of six 15cm Škoda L/40 guns mounted in casement turrets in the hull, three on each side of the ship. They could fire four to five rounds a minute and had an elevation range of -7° to +20°. Based on a Krupp design, these were the first pieces of heavy naval artillery made by the Škodawerke A.G. at Pilsen. For protection against torpedo boats, the Monarchs each mounted ten 4.7cm Škoda L/44 and four 4.7cm Hotchkiss L/33 quick-fire guns, which could fire up to 30 shells per minute with a maximum range of over 3,600m, and one Škoda M1893 8mm machine gun. Two 7cm Uchatius L/15 bronze-steel boat cannons were provided for use with landing parties. *Wien* and *Monarch* were later equipped with a single 7cm Škoda L/50 K 10 BAG antiaircraft gun in 1917. Finally, each ship mounted two 450mm broadside torpedo tubes and carried four 450mm torpedoes, each possessing a 59kg explosive charge.

Armor and Machinery

The Monarchs were armored with nickel-steel plate manufactured by the Witkowitzer Bergbau und Eisenhüttengewerkschaft (Witkowitz Mines and Iron Works) in Moravia. The armored belt was thickest amidships at 270mm between the turrets, tapering to 220mm along the barbettes, and then gradually reducing to 120mm up to the bow. The casemate was protected by 80mm of armor; beneath the belt it was 180mm thick. The primary turrets were protected by 250mm of armor and the conning tower by 220mm. The horizontal deck armor was 40mm thick.

Monarch and *Wien* had five cylindrical boilers and two vertical four-cylinder triple-expansion engines powering two shafts that drove two propellers, each with three 4.42m diameter blades. These engines gave the ships 8,500 indicated horsepower and a maximum speed of 17.5 knots. *Budapest* had similar engines but these were fired by 16 Belleville water tube boilers that allowed the engines to generate 9,100 indicated horsepower, giving the ship a maximum speed of 17.8 knots. Water tube boilers were smaller than previous cylindrical boilers and could be dismantled. Being substantially lighter, they also saved vital weight that could be used for heavier armament or armor. Their main advantage, however, was their ability to change the flow of steam to the engines much more quickly, allowing for more rapid changes in speed. After *Budapest*, all subsequent Austro-Hungarian battleships would be equipped with water tube boilers. Supplied with a maximum load of coal at 500 tons, the Monarchs had a range of 3,500 nautical miles at 9 knots.

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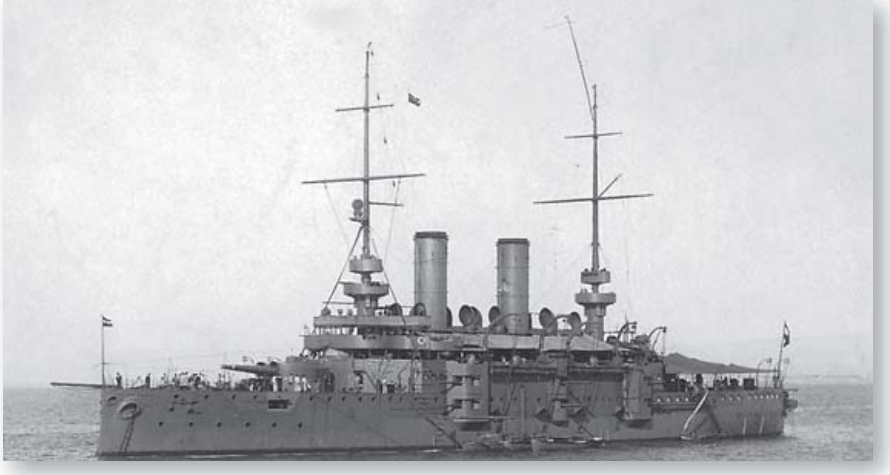
HABSBURG CLASS

Excellent view of the stern of the Habsburg-class battleship *Árpád*, showing the elegantly decorated captain's stern walk.

Admiral Hermann von Spaun replaced Admiral Sterneck as Chef der Marinesektion and Marinekommandant after the death of the latter in 1897. Spaun recognized that the concepts of the Jeune École were insufficient for Austro-Hungarian needs, and shortly after assuming command of the navy recommended a new fleet plan calling for 12 battleships, 12 cruisers, 12 destroyers, and 72 torpedo boats, all to be completed over a ten-year period. The three ships of the Monarch class would make up the first of Spaun's 12-battleship fleet but the remaining nine were to be new and built to similar standards set by other navies. Spaun was fortunate to have the support of Archduke Franz Ferdinand, a staunch advocate of the navy who also recognized the need for battleships. The empire's foreign minister also pressed for a stronger navy that would be able to protect Austro-Hungarian commerce overseas, especially after observing the Spanish naval defeats inflicted by modern American battle fleets at Santiago de Cuba and Manila Bay in the Spanish American War of 1898. Austro-Hungarian steamship lines had significant trading interests in the Levant, and ports of call continued to spread throughout the world. By the beginning of World War I, Austria-Hungary's merchant marine would rank seventh in tonnage among those of Europe. In 1898 Spaun was granted enough of a budget increase to begin construction the following year on the first of a new series of ocean-going battleships.

The keel of the SMS *Habsburg* was laid on March 13, 1899 in the yards of STT and was completed on December 31, 1902. Her sister ships, SMS *Árpád* and SMS *Babenberg*, were laid down on June 10, 1899 and January 19, 1901, and finished on June 15, 1903 and April 15, 1904 respectively. Budget constraints enforced by the Hungarian parliament allowed for only one battleship to be purchased per year, beginning with *Habsburg*. The ships of the Habsburg class had a displacement of 8,823 metric tons fully loaded. Length was 113.11m at the waterline, width was 19.86m at beam, and draft was 7.46m fully loaded. The Habsburgs were a marked improvement on the



Árpád photographed during an exercise in 1907. Note the darker pre-war paint scheme and the large superstructure.

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Monarch class, primarily due to their sea-keeping abilities. They were significantly smaller than contemporary battleships in other navies, a consequence of Popper having to adhere to such limited annual budgets (battleships were not the only vessels that had to be purchased for the navy). The Habsburg class was similar in appearance and distribution of armament, albeit in a scaled-down form, to the battleships of the British London class. *Habsburg*'s complement was 32 officers and 606 ratings compared to 780 for HMS *London* but the British battleship's displacement was nearly twice that of *Habsburg*'s at 15,700 tons. This was a clear example of Popper designing the maximum ship with minimum means. Although cramped, there was still enough space to provide the crew with showers and hot running water. The ships were illuminated with electric light, and electrically powered ventilation fans kept fresh air circulating as best as possible.

Armament

The primary cause of the lower displacement of the Habsburg class when compared to that of the London class was its smaller-caliber primary armament. Where the 30.5cm gun had become the standard primary rifle for the Royal Navy's battleships, the Habsburg class utilized the 24cm Krupp L/40 C97 guns, similar to the ones that had been used in the Monarch class. This may not have seemed out of place to the k.u.k. Kriegsmarine's admirals, as the Germans had used the same guns for the primary armament in their contemporary Wittelsbach class battleships. Nevertheless, the penetration power of the guns was becoming negated with the growing use of Krupp cemented steel plate. What made the Habsburg class different from the Wittelsbach class, however, was that they carried only three 24cm guns: two in the bow main turret and one in the stern main turret. The deletion of a gun from the stern turret was necessary for Popper to keep the ships' displacement within budget. The main turrets could be traversed 130º in either direction and had an elevation range of -4° to +20°. Turning, aiming, and loading the guns was made easy due to the turrets and guns having electric motors, and the ammunition hoists were electrically powered as well. Two hundred and forty shells were supplied for the 24cm guns. *Babenberg* was unique in that it was the first modern Austro-Hungarian battleship to receive domestically produced primary and secondary armaments. She mounted three 24cm Škoda L/40 K 01 guns, the first heavy-caliber naval artillery to be forged by Škoda (albeit license-produced copies of the Krupp 24cm L/40 gun).

The Habsburgs mounted 12 15cm Krupp L/40 C96 secondary guns, double the secondary armament of the Monarchs and equal to the Londons. They were arranged in double-decker casemates with six guns on each side of

B

SMS *HABSBURG*

In 1898 the armored cruiser *Kaiserin und Königin Maria Theresia* was almost fired upon off Cuba by the American battleship *Indiana* in a case of mistaken identity during the Spanish American War. The immediate realization that in the event of war the k.u.k. Kriegsmarine had few ships capable of defending Austro-Hungarian interests or commerce outside of the Adriatic finally made a number of politicians, including some Hungarian, recognize that the navy needed powerful ocean-going battleships like those of the other Great Powers. The growing naval discourse in political circles and the selection of a battleship-minded admiral, Hermann von Spaun, to take command of the navy in 1897 finally led to the beginning of regular construction of modern pre-dreadnought battleships in the empire. The first Austro-Hungarian foray into pre-dreadnought construction was the Habsburg class. Here is SMS *Habsburg* after the reconstruction of its superstructure just before World War I.

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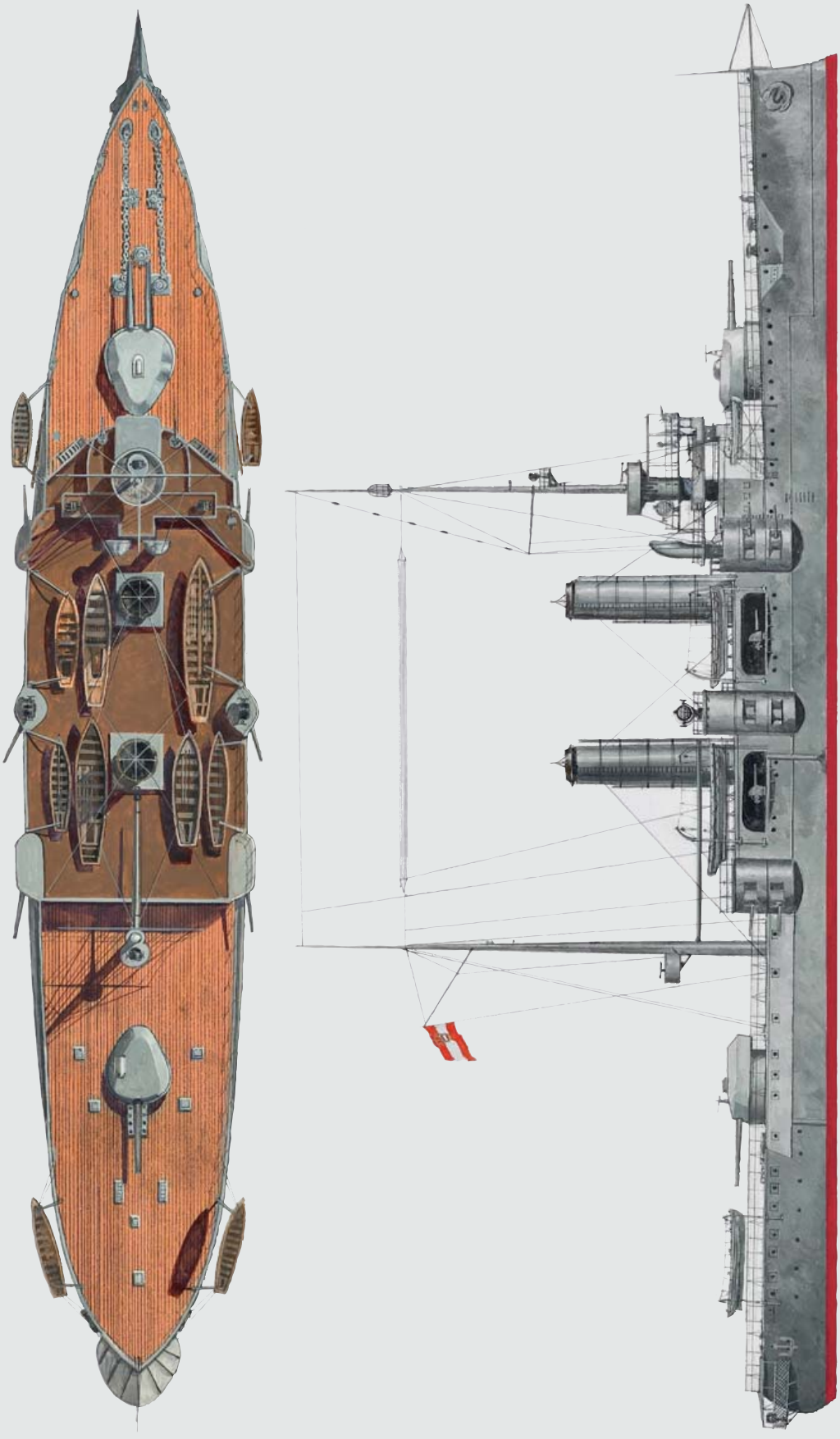

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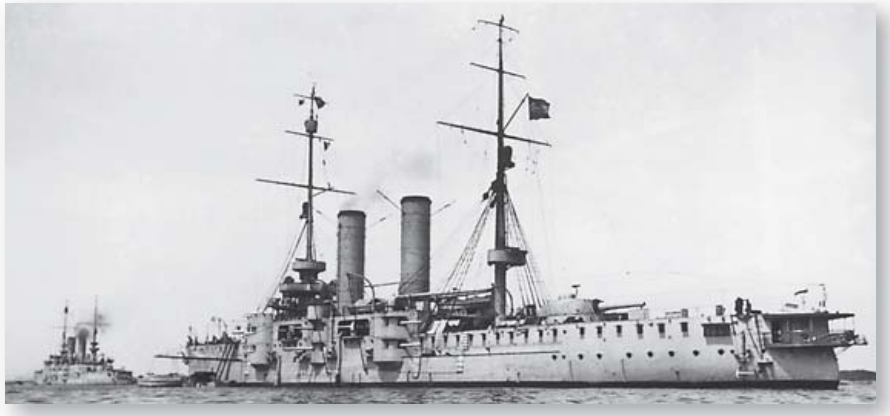
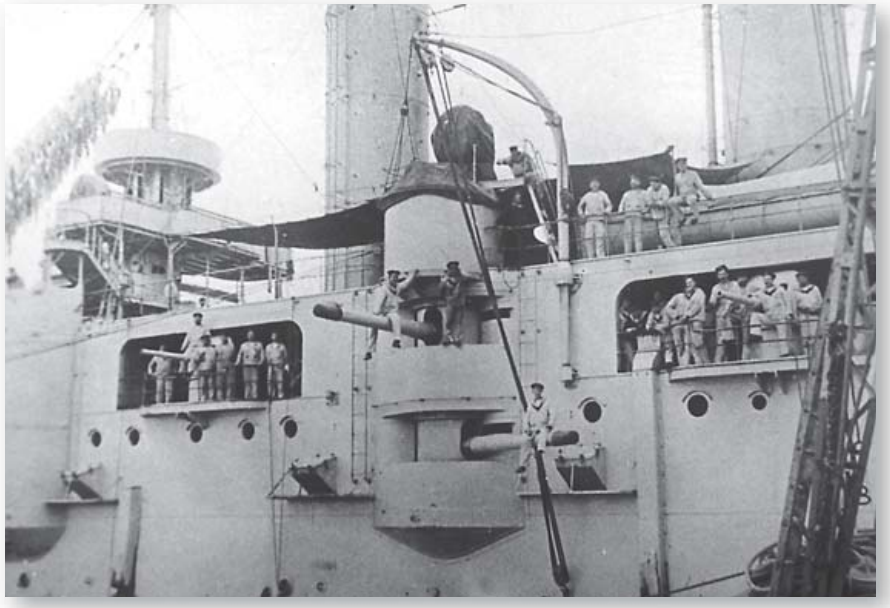


Habsburg as seen after her reconstruction with a smaller superstructure, intended to improve her stability.

the ship. The lower gun casemates were rather low and it is doubtful if they could have been used effectively in heavy seas. Unlike the main turrets, the 15cm guns had to be manually trained. The height of the double-decker casemates made the ships top heavy, causing stability issues at sea, and during 1911–1912 *Habsburg* and *Árpád* had their superstructures rebuilt. Tertiary armament included ten 7cm Škoda L/45 guns that sat on single mounts (in reality the 7cm Škoda L/45 gun had a barrel diameter of 6.6cm but was referred to as "7cm," and this designation will be used throughout the rest of the book). These guns were initially intended for anti-torpedo boat defense but they later proved effective as antiaircraft weapons. Each ship carried 4,000 7cm shells. The Habsburgs were also fitted with 12 37mm Vickers autocannons for the same purposes, as well as four Škoda 1902 8mm water-cooled machine guns. Each ship had two 7cm Uchatius L/15 bronze-steel boat cannons that could be used to arm the steam launches or could be mounted on a carriage and brought ashore with a landing party. The Habsburgs carried two underwater broadside torpedo tubes that were housed under the command bridge, and six Whitehead 45cm torpedoes. Lastly, each ship could carry up to 20 mines that could be laid by the ship's launches.



A view of *Habsburg*'s central 15cm Krupp L/40 C96 gun casemates, two 7cm Škoda L/45 gun batteries, and the redesigned superstructure

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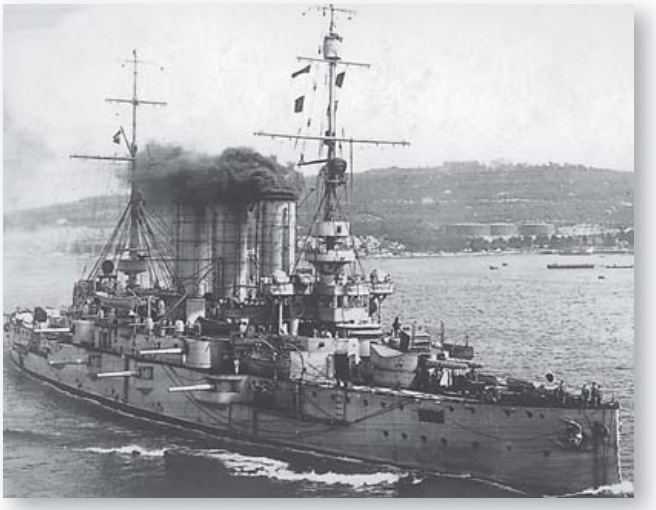
Armor and Machinery

Armored plating accounted for roughly 25 percent of the Habsburgs' total displacement. The plates were made of hardened nickel-chrome-steel through a process developed by Krupp and forged domestically by Witkowitz. The armored belt was 220mm to 180mm thick along the centerline but tapered down to 80mm at the bow. The primary turrets were protected by 280mm of armor but only 210mm in the rear. The armor on the conning tower was 200mm thick and that protecting the secondary batteries was 135mm thick. Above the main belt the sides were protected by 10mm of nickel-steel up to the gun deck. The armor of the deck was 40mm thick. The 23,000kg armored ram bow was 40mm thick and made from a single casting by the Magyar Királyi Diósgyőri Acélművek (Royal Hungarian Diósgyör Steel Works).



Erzherzog Friedrich returning to Pola after gunnery exercises in the Fasana Channel.

The Habsburgs were each powered by two 4-cylinder vertical triple-expansion engines built by STT. Steam was supplied by 16 Belleville boilers. *Habsburg*'s engines on average developed 15,063 indicated horsepower, giving the battleship a top speed of 19.62 knots. The power output of *Árpád*'s and *Babenberg*'s engines were both slightly different. The ships were propelled by two bronze three-bladed screws, each measuring 4.88m in diameter. With 800 tons of coal, they had a sailing radius of 3,600 nautical miles at a speed of 12 knots.

ERZHERZOG KARL CLASS

In the early 1900s, Popper was commissioned to design a new class of battleship that could match or supersede the two units of the Regina Margherita class then being built in Italy. This marked the first time since the signing of the Triple Alliance that the k.u.k. Kriegsmarine took a more active view of the Italian Regia Marina as a possible future enemy in its strategic planning. The key requirement to the new design was that it must have a stronger secondary armament than the Regina Margheritas. This design was the last Austro-Hungarian battleship class commissioned during Admiral Spaun's tenure as commander-in-chief of the fleet.

All of the Erzherzog Karls were built in Trieste by STT. SMS *Erzherzog Karl* was laid down on July 24, 1902, followed by SMS *Erzherzog Friedrich* on October 4, 1902, and SMS *Erzherzog Ferdinand Max* on March 9, 1904. The first of the class to be completed was *Erzherzog Karl* on June 17, 1906, then *Erzherzog Friedrich* on January 31, 1907, and finally *Erzherzog Ferdinand Max* on December 21, 1907. The Erzherzog Karls displaced 11,413 metric tons fully loaded. Their displacement may have been greater than any previous Austro-Hungarian warships but it was still well below that of contemporary battleships in other navies. They were 124.35m long at the waterline, 21.78m wide at the beam, and had a draft of 7.51m. Ship's complement consisted of 37 officers and 703 ratings.

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The fore deck of *Erzherzog Karl* with its 24cm Škoda L/40 K01 guns in the primary turret. Austro-Hungarian battleships had little space below deck for their crews so they were forced to find distraction on deck. The almost constant inactivity coupled with cramped quarters and poor food eroded crew morale on many ships over the course of the war.

Armament

The Erzherzog Karls carried the 24cm gun as their primary armament but returned to having four of the guns mounted in two turrets as pairs, unlike the three-gun arrangement in the Habsburgs. The primary guns aboard the Erzherzog Karls were 24cm Škoda L/40 K01 cannons with an elevation range of -4° to +20°. As with the Monarchs and Habsburgs the primary turrets were manned by 20 sailors. It was evident at the time that other navies had adopted 28cm and 30.5cm primary weapons so why did Popper persist with 24cm guns? Again, given the always tight financial limitations he had to work within, there was only so much weight to be utilized. In the case of the Erzherzog Karls, the lighter primary armament resulted in a much more substantial secondary armament. This consisted of twelve 19cm Škoda L42 guns. Four were housed in turrets mounted on deck while the remaining eight were located in casemates within the hull, four on each side. With well-trained crews these guns could fire around three shells per minute, and when elevated to 20° they could fire a 97kg armor-piercing shell up to 20,000m. Electric motors were used to traverse and position both the primary and secondary turrets and guns. But like the casemated batteries in the Habsburg class, the ones aboard the Erzherzog Karls had difficulty operating in rough seas. Tertiary armament included twelve 7cm Škoda L/45 guns, four 47mm Škoda L/44 quick-fire and two 47mm Škoda L/33 quick-fire guns, four Vickers BR 37mm autocannons, and four Schwarzlose 8mm machine guns. The ships also had two underwater broadside 45cm torpedo tubes that were located under the barbette of the forward turret, rotated 27° forward.

C

SMS *ERZHERZOG KARL*

The Erzherzog Karl class represented Admiral Spaun's hard-fought efforts to create a blue-water fleet but frustration over the political struggles that brought about this fleet eventually compelled Spaun to retire in 1904. Again, Siegfried Popper created the maximum amount of ship that budget strictures allowed. The caliber of the primary armament was less than that of the Regina Margheritas (24cm vs. 30.5cm) but double in number (four vs. two). Furthermore the Erzherzog Karls had a significantly stronger secondary armament and, perhaps most importantly, much stronger armor protection. Popper rationalized that the Erzherzog Karls would not require a heavy primary armament since the Italians had sacrificed armor protection for armament and speed. Seen here is SMS *Erzherzog Karl*.

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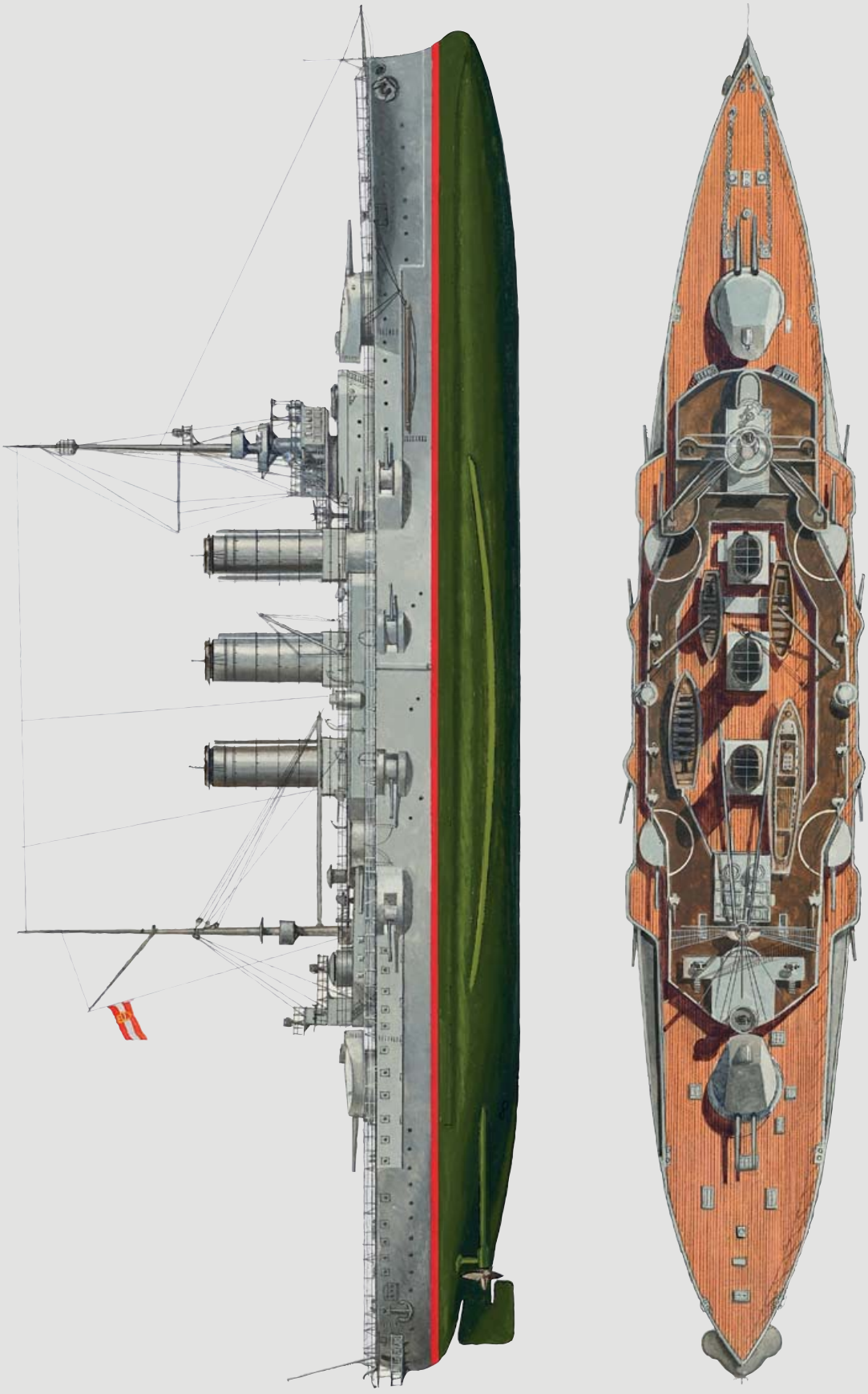

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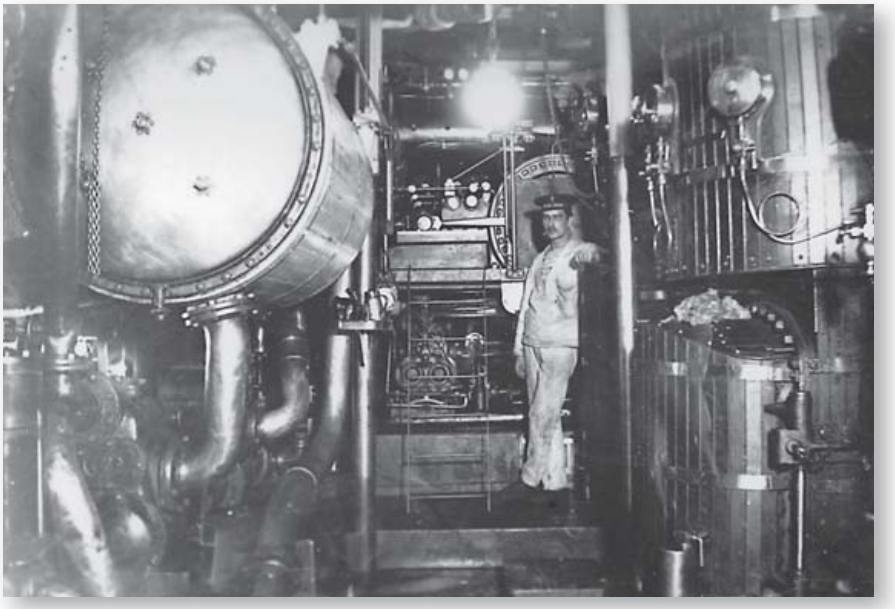
View of the engine room aboard *Erzherzog Friedrich*.

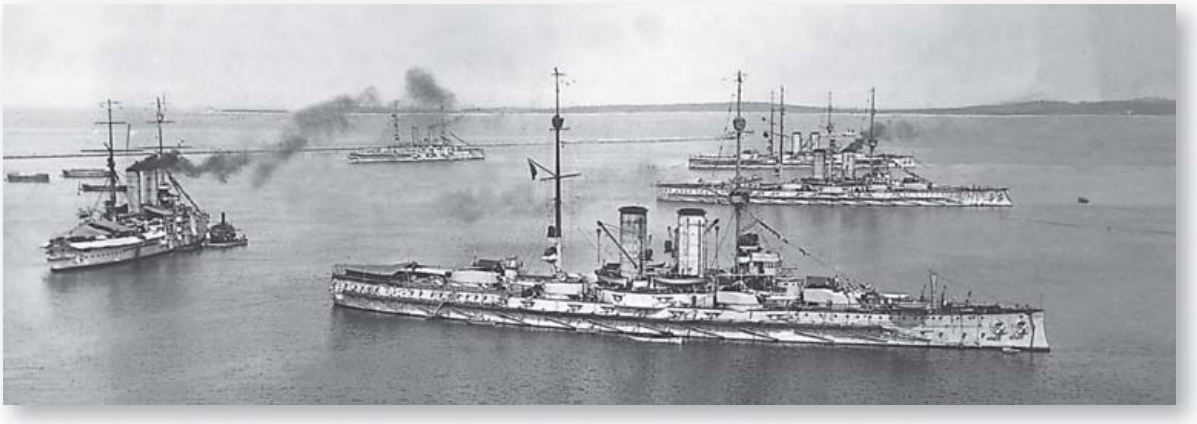


Armor and Machinery

The Erzherzog Karls were protected by Krupp cemented steel plate, manufactured by Witkowitz, with a 210mm belt running between the primary turrets and tapering to 50mm at the ends. Vertically the belt tapered to 150mm and the casemates were covered with 170mm plate. The primary turrets were protected by 240mm plate, the conning tower by 220mm, and the 19cm gun turrets by 150mm. Horizontal deck armor was 55mm over the ships' vital spaces. The bulkheads were 200mm thick and the ships were divided into 15 watertight compartments. The Erzherzog Karls were the first battleships in which Popper incorporated a double bottom for protection against mines. This ran for 73m along the central part of the hull.

The ships were powered by two four-cylinder triple-expansion engines that provided on average 13,530 indicated horsepower. Maximum speed was 20 knots. Steam was generated in 12 Yarrow water tube boilers located in three boiler rooms. The engines drove two three-bladed propellers, each blade measuring 5m in diameter. With a maximum load of 1,565 tons of coal in their bunkers, the ships had a range of 4,000 nautical miles at a speed of 10 knots.

All three ships of the Radetzky class moored at Pola: in front is *Erzherzog Franz Ferdinand*, followed by *Radetzky* and *Zrinyi*. To the left is *Árpád* and behind her is *Babenberg*.



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RADETZKY CLASS

View of the forward primary and intermediate gun turrets aboard *Erzherzog Franz Ferdinand*. This photo gives a good idea of the compact size of the Austro-Hungarian semi-dreadnoughts.

On May 18, 1904 the operations office of the Reichskriegsministerium's Navy Department ordered designs for a new class of battleship that would supersede the new Regina Elena class of battleships that were under construction in Italy. The new class of battleship was meant to trump anything that the Italians had or were building. The resulting Radetzky-class battleships were the first battleships constructed after Admiral Rudolf Graf von Montecuccoli degli Erri was promoted to Chef der Marinesektion and Marinekommandant in 1904, replacing the retiring Spaun. In November 1906 Montecuccoli requested funding from the Austrian and Hungarian parliaments for the new class of three 14,500-ton battleships, and received it after promising Hungarian industry a higher proportion of naval construction contracts. All of the ships were built by STT, with the first, SMS *Erzherzog Franz Ferdinand*, laid down on September 12, 1907 (roughly three months before the commissioning of the last of the Erzherzog Karls), followed by SMS *Radetzky* on November 26, 1907, and SMS *Zrinyi* on January 20, 1909. *Erzherzog Franz Ferdinand*, *Radetzky*, and *Zrinyi* were completed on June 5, 1910, January 15, 1911, and September 15, 1911 respectively. The Radetzky-class battleships had a full displacement of 15,845 metric tons. They were 138.8m long at the waterline, 24.6m wide at the beam, and had a draft of 8.1m fully loaded. Ship's complement was 30 officers and 860 ratings. The upper works were minimal, consisting of only the conning tower with the command bridge, a small upper casemate between the masts, and an auxiliary command station between the aft mast and aft primary turret. The officers' quarters aboard the Radetzkys were quite roomy but there was little space for the ratings' accommodation, a result of Popper's weight-saving measures.

Armament

When the Radetzkys were completed they outgunned any of the Italian battleships then in service and the remainder of the Regina Elena class that were just coming into service. The Radetzkys were the first Austro-Hungarian battleships to be armed with 30.5cm guns. Four 30.5cm Škoda L/45 guns were mounted in pairs within the fore and aft primary turrets. They had an elevation range of -4° to +20° and the turrets could traverse 140° in either direction. Raised to +20° elevation, the 30.5cm guns could fire a 450kg armor-piercing shell 20,000m away, and each ship carried 20 armor-piercing and 80 high explosive 30.5cm shells per gun. The semi-dreadnoughts' unique intermediate armament was eight 24cm Škoda L/45 guns mounted in pairs in twin turrets located amidships. The limited penetrating power of 24cm shells has already been discussed; they effectively rendered the intermediate armament useless against well-protected ships at medium to long range. Furthermore, the splashes made by 24cm shells could not be distinguished from those of the

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30.5cm shells, making accurate fire control extremely difficult. Eight hundred 24cm shells were carried, which had the inadvertent effect of limiting the number of 30.5cm shells kept aboard. Nevertheless, the mixed heavy guns of the Radetzkys served effectively in the shore bombardment role during World War I.

In terms of secondary armament the Radetzkys carried twenty 10cm Škoda L/50 guns, recently developed by Škoda for the new Admiral Spaun- and Novara-class light cruisers. Sixteen of the 10cm guns were mounted in turrets in the hull, eight on each side, and the remaining four were located in the upper casemate, two on each side. These guns could fire eight to ten rounds a minute and up to 3,000 10cm shells were carried. Tertiary armament included six 7cm Škoda L/45 guns, four 47mm L44 and one 47mm L33 Škoda quick-fire guns, and two 66mm landing guns. The Radetzkys also mounted three 45cm underwater torpedo tubes, two on each side under the forward primary turret and one located in the stern.

Armor and Machinery

The Radetzkys carried a 230mm armored belt made of Krupp cemented steel that ran from the forward primary turret barbette to the one in the stern, protecting the turrets, ammunition stores, machinery rooms, and other vital underwater areas. The belt tapered to 100mm fore and aft to the bow and stern. Behind the belt was a 58mm torpedo bulkhead that ran the length of the ship. This was part of Popper's attempt to create a *gepanzerter minenboden*, or double bottom, for increased underwater protection against torpedoes and mines. Popper's double bottom was based more on his own theories than through experimentation. Between the outer plating and the torpedo bulkhead was the wing-passage, an empty space intended by Popper to cushion the inner bulkhead from an underwater blast. Budget limitations never allowed Popper

D

SMS *RADETZKY*

At the end of July 1905 a navy commission was formed to review new battleship designs. Three of the five designs submitted by Siegfried Popper had four heavy-caliber primary guns and a substantial number of intermediate-caliber guns (intermediate-caliber defined as a type of gun with a diameter between those in the primary and secondary batteries). The use of a number of intermediate-caliber guns in place of some of the secondary armament was a contemporary idea among naval circles in Great Britain, the United States, France, and Japan to increase the firepower of battleships. This was a half-step towards the creation of an all big-gun battleship and these designs were hence termed semi-dreadnoughts. The other two designs from Popper were early dreadnought designs, one with eight 28mm guns in four double turrets and the other with six 30.5mm guns in two double and two single turrets. In February 1904 Popper had visited British naval yards on a fact-finding mission and had met with Sir William White, the retired Director of Construction for the British Admiralty, who may have shared with Popper the growing support in Britain for all big-gun battleships. Given his insight into future British naval planning, Popper advocated his design with six 30.5mm guns to the navy commission. He also argued that analysis of the recent Battle of Tsushima suggested that future battles would be fought with big guns at greater distances, thus negating the effectiveness of battleships with diversified armament that were intended to fight at shorter distances.

Despite Popper's forecasts, the navy commission turned down his all big-gun design and instead opted for a design with both primary and intermediate armament. The reasoning for this decision was, not surprisingly, cost. The displacement for an all big-gun battleship would have most likely exceeded the 16,000-ton maximum displacement required by the commission. To build a battleship that displaced more than 16,000 tons would require the construction of new dry and floating docks, an expense that the Reichskriegsministerium would probably not support. Thus, the k.u.k. Kriegsmarine missed the opportunity to be the first Mediterranean naval power to construct a dreadnought battleship. Seen here is SMS *Radetzky*.

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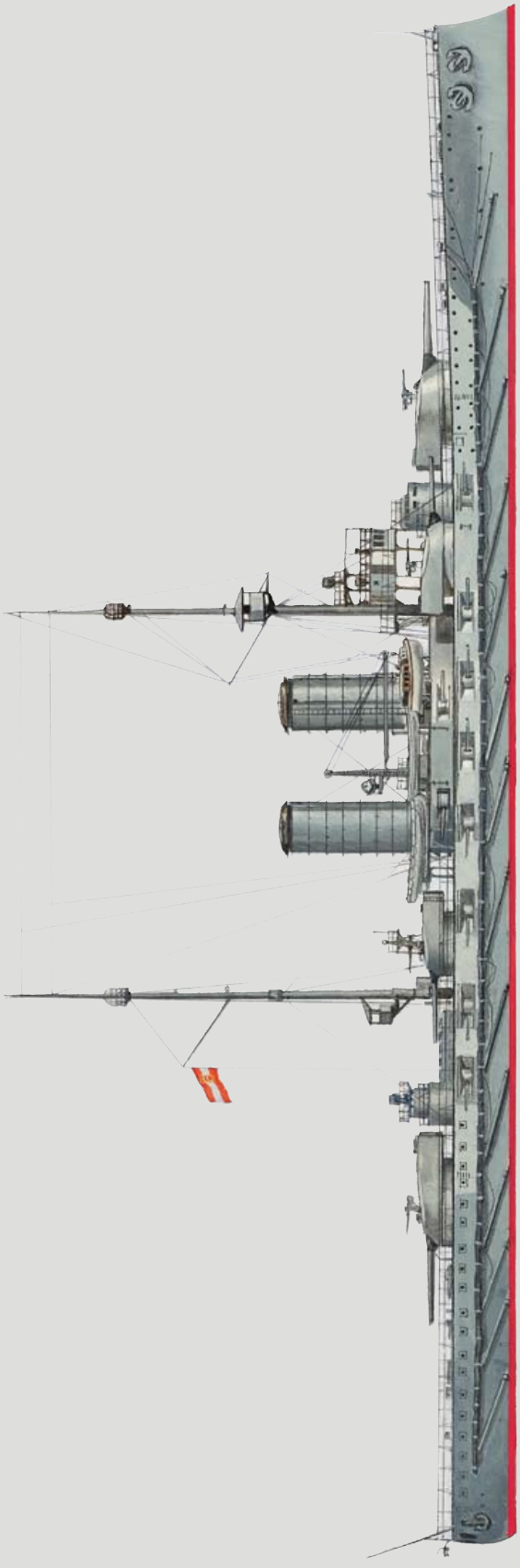

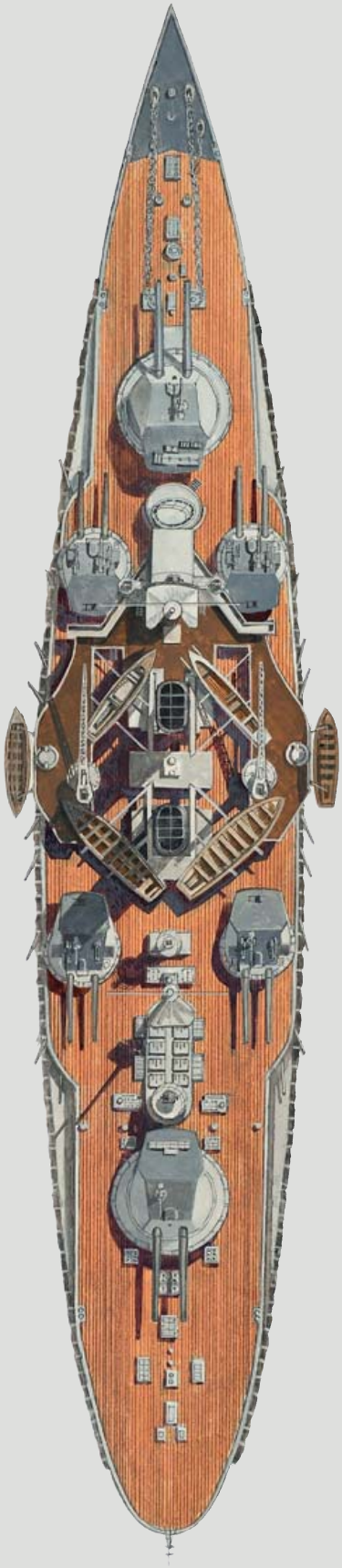

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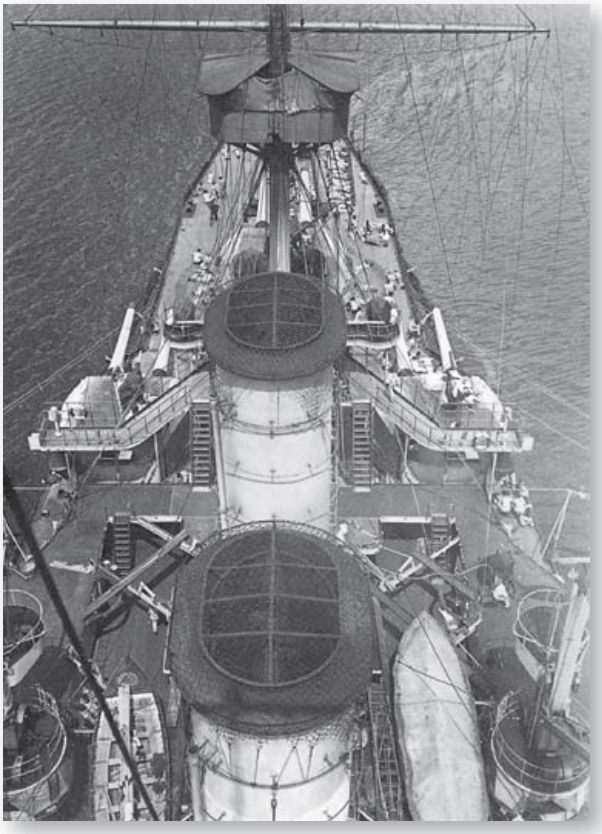

A fascinating view of the stern half of *Radetzky* as seen from the crow's nest on the forward mast.

to effectively test his underwater protection design however. Bulkheads between compartments were 150mm thick. The primary turrets were covered with 250mm of armor and the intermediate ones by 200mm. The armor on the roofs of the primary turrets was 60mm thick while those of the intermediate turrets was 50mm and made of non-cemented steel. The protection on the turrets' roofs was very thin and would have posed potential problems in battleship-on-battleship combat. The casemated secondary batteries were protected by 120mm of armor. The armor on the sides of the conning tower was 250mm thick while the roof was protected by 100mm of armor. Finally, the main deck had 48mm of armor under the teak.

Regarding propulsion, the Radetzkys retained the triple-expansion steam engines that had been traditionally used on Austro-Hungarian battleships. Although the British were experimenting with turbine propulsion in their new dreadnoughts and battlecruisers, the technology was new, not fully tested, and very expensive, so it was understandable for Popper to retain triple-expansion engines in his design. The Germans and Americans also retained triple-expansion engines in their first classes of dreadnoughts, waiting to see the results from British experimentation. In the Radetzkys, 12 Yarrow water tube boilers powered two four-cylinder vertical triple-expansion engines that produced 19,800 indicated horsepower. During trials *Erzherzog Franz Ferdinand* made over 20.5 knots. The ships had twin shafts and twin screws and with full bunkers of 1,350 tons of coal could travel 4,000 nautical miles at 10 knots.

The bridge of *Zrinyi*. The upperworks on the Radetzky and Tegetthoff classes were minimal.

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TEGETTHOFF CLASS

Admiral Rudolf Graf von Montecuccoli degli Erri aboard one of the Tegetthoff-class dreadnoughts in 1913. As chief of the Marinesektion and Marinekommandant from 1904 to 1913, Montecuccoli succeeded in creating a modern Austro-Hungarian battle fleet just before the beginning of World War I.

Admiral Montecuccoli proposed a new naval building plan in January 1909 that called for the construction of four new dreadnought battleships following the Austro-Hungarian annexation of Bosnia-Herzegovina in 1908, an act protested by the Italians. Word of Montecuccoli's ambitious dreadnought-building plan was leaked to the Italian media in April 1909, and the Italian government hastily provided the Regia Marina with the necessary funds to begin construction of its first dreadnought, *Dante Alighieri*. Montecuccoli's building plan was still only on the table when work began on the *Dante Alighieri* but just the mention of future Austro-Hungarian dreadnoughts combined with the completion of the Radetzky-class battleships made Italian admirals quickly realize that the k.u.k. Kriegsmarine was beginning to pose a serious qualitative threat. Although he had inadvertently kicked off the brief but intense Mediterranean naval arms race prior to World War I, Montecuccoli was not able to react as swiftly as the Italians had. The unforeseen fall of the government and arguments over a new coalition in Hungary in April 1909 left Budapest without a parliament for over a year. The lack of government in Budapest meant that a new naval budget for the construction of dreadnoughts could not be approved, due to the cumbersome procedural strictures of the dual monarchy.

It was an inopportune time for Montecuccoli to be without new funds, not only because of the risk of falling behind the Italian dreadnought program but also because the construction of the Radetzky-class ships was nearing completion. Without new projects to begin, STT, Škoda, and Witkowitz would all be forced to lay off skilled laborers, meaning that when construction of the new dreadnoughts was finally approved, the manufacturers would not have an immediate skilled workforce in place to complete the ships in a timely manner. If all of this was not bad enough, Montecuccoli learned that the Italians were already planning a new trio of dreadnoughts to follow *Dante Alighieri*, the Conte di Cavour class. Fortunately for the fleet commander, the navy was not the only party concerned about a pending lull in battleship construction. Representatives from STT, Škoda, and Witkowitz met with Montecuccoli in the summer of 1909 to discuss beginning work on two new dreadnoughts without waiting for the government to authorize their funding. It was in their financial interests to keep their yards and foundries

The launch of *Szent István* at the Ganz & Co. – Danubius yard in Fiume on January 17, 1914. The teak layer on the hull is visible on the sides of the ship. The support of teak was necessary to bolt on the armor plates before electric welding was introduced.

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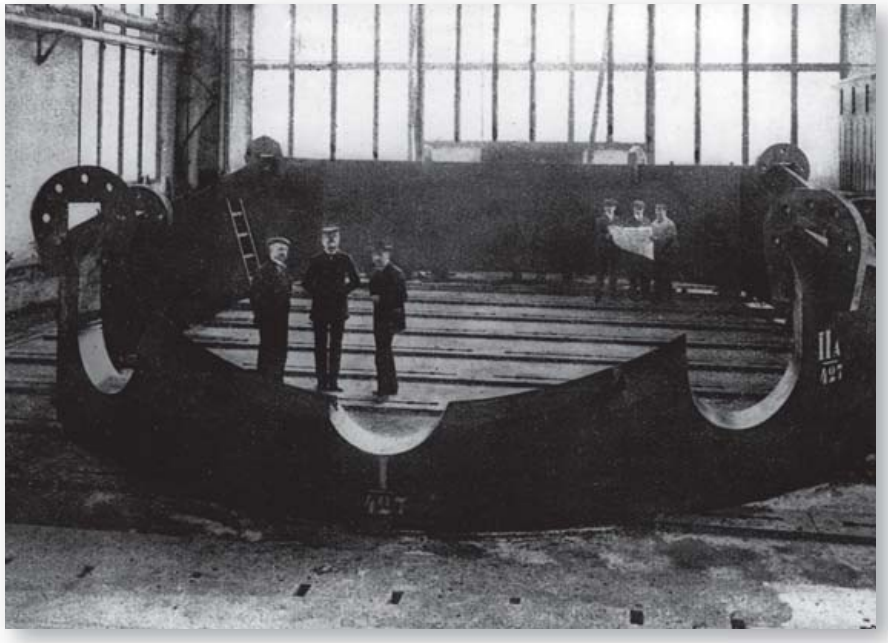
operating and Montecuccoli did not want to lose any time to the Italians in the dreadnought race. Although he claimed that the industrial concerns were beginning construction of the new ships based on the assumption that government funding would eventually be forthcoming, Montecuccoli was forced to seek credit, for which he himself and the navy was responsible, in order for work to begin. This was a risky and illegal venture but the Rothschild banking house of k.k. Priv[ilegierte] Credit-Anstalt für Handel und Gewerbe, which held significant shares in STT, Škoda, and Witkowitz, provided the credit after receiving assurances from Franz Ferdinand himself. Franz Conrad von Hötzendorf, chief-of-staff of the armed forces, and the foreign ministry also gave their tacit support to Montecuccoli's scheme.

Thus, when the budget delegations from the Austrian and Hungarian parliaments finally convened in the autumn of 1910, Montecuccoli had two dreadnoughts already under construction. Surprisingly, the delegations accepted Montecuccoli's "cover story" for the commencement of the dreadnoughts' construction and he was aided by the fact that Italy had already begun construction on the Conte di Cavour class of dreadnoughts, instilling a sense of immediacy for new battleship construction among the politicians. The navy was granted the necessary funds for its first two dreadnoughts in the retroactive 1910 budget and Montecuccoli received initial funding in the 1911 budget for the future construction of two further dreadnoughts. To obtain Hungarian approval for the second two, Montecuccoli promised that one of them would be built by the Hungarian Ganz Danubius shipyard in Fiume, along with several other future cruisers and destroyers. By March 1911, Austria-Hungary's dreadnought program was finally official.

STT was already working on several dreadnought designs when Montecuccoli began to negotiate the secret building program. Popper, who retired from the navy in 1907 after completing the design of the Radetzky class, was now working for STT as a design consultant and ended up being the lead designer for the dreadnought project. He had been toying with several dreadnought designs ranging from 20,000 to 25,000 tons in displacement, and armed with



The vertical armor plates of one of the primary triple turrets for *Viribus Unitis* designed by Škoda. The men inside the turret give a good indication of its size.

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Viribus Unitis, *Tegetthoff*, and *Zrinyi* at La Valletta harbor during a visit to Malta in late May 1914.

eight to twelve 30.5cm guns arranged in twin turrets. Although he ordered the ships without a set budget, Montecuccoli knew he would eventually have to convince the budget delegations to approve the ships (at the same time realizing that previous budgets allowed only for smaller ships) and thus insisted on a more compact design with smaller displacement. While negotiating the design parameters, Montecuccoli and STT learned of the Italian decision to utilize triple turrets on the *Dante Alighieri*. Fortunately the k.u.k. Kriegsmarine was in a good position to react quickly to this development. Well before *Dante Alighieri* was even launched, Škoda had built a working scale model of a triple turret at the request of the navy to test the feasibility of such a design. Tests proved successful, showing the triple turret to be a more efficient use of deck space rather than a large number of twin turrets, and – particularly important to the peculiarities of Austro-Hungarian design doctrine – it saved weight. Škoda proceeded to develop its triple-turret design, as the Russians had shown interest in purchasing it for their first class of dreadnoughts. So when the k.u.k. Kriegsmarine decided to incorporate triple turrets on its new dreadnoughts, Škoda was prepared to begin immediate construction.

The first Austro-Hungarian dreadnought, SMS *Viribus Unitis*, was laid down at STT on July 24, 1910 followed by *Tegetthoff* on September 24. Work on SMS *Prinz Eugen* began at STT on January 16, 1912, while Danubius laid down *Szent István* on the 29th of that same month. *Tegetthoff* was completed on July 21, 1913 and *Prinz Eugen* on July 17, 1914, but Danubius took over three years to complete *Szent István*, commissioned on December 13, 1915, as the yard had no previous experience in building such a large and complex ship. Montecuccoli knew that Danubius was not prepared for such a project but the contract was a political necessity in order to obtain Hungarian approval of his building plans. The Tegetthoff-class dreadnoughts were relatively compact ships for their firepower, again demonstrating the tight budget limitations on naval construction in the Empire. Displacement was 21,595 metric tons fully loaded. They were 152.2m long at the waterline, 27.3m wide at the beam, and had a draft of 8.9m fully loaded. The complement for the ships built at STT was 31 officers and 1,066 ratings, while that of the *Szent István* was 38 officers and 1,060 ratings. Like the Radetzkys, the superstructure of the Tegetthoffs was rather minimal, consisting of a conning tower, command bridge, and an armored auxiliary control station aft of the rear mast. The ships were flush decked and had very little space for crew accommodation.

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A 30.5cm cartridge being loaded into a gun barrel inside a triple turret.

Armament

The primary armament of the Tegetthoffs was twelve 30.5cm Škoda L45 K 10 naval guns, similar to ones introduced with the Radetzky class, mounted in four triple turrets. What made the K 10 unique was that it was 5cm longer than the model used on the Radetzkys, so that a larger propellant charge could be loaded. The guns had a range of 25km at an elevation range of -4° to +20°. The high observation platforms aboard the Tegetthoffs offered the gunners a greater degree of accuracy at long ranges. What made the primary armament of the Tegetthoffs unique was the arrangement of the big guns in triple turrets, which were superimposed fore and aft. The gun turret rested on a watertight turret shaft that rotated with the turret and it extended all the way down to the double bottom. From the bottom up was the projectile loading platform followed by the cartridge loading platform. The shells were then brought up by elevators to the transfer platform, which served as a temporary ammunition stowage area until the shells were lifted into the gun platform. A targeting station protruded through the roof at the rear of the gun platform, in which a Barr & Stroud rangefinder was located. Each primary turret was crewed by one officer, an electrician, an artillery mechanic, 37 artillerymen, and 50 sailors.

The secondary armament consisted of twelve 15cm Škoda L50 K 10 guns housed in manually rotated turrets in the casemate, six on each side. As with all Austro-Hungarian battleships, their close proximity to the waterline made them almost useless in rough seas. Tertiary armament was more substantial than the previous Radetzky class however. Eighteen 7cm Škoda L50 K 10 TAG guns were mounted on the deck amidships and several on top of the second and third primary turrets. Some of these were later replaced with similar 7cm Škoda L50 K 10 BAG antiaircraft guns, which were mounted on the primary turrets. The BAG variant was a dual-purpose anti-torpedo boat/antiaircraft weapon that had no protective shield for the crew. This was so that the gunner had an unobstructed line of sight to the target. The guns were manned by members of the respective primary turret crew. The antiaircraft shells gave off a trail of smoke when fired, an early form of tracer ammunition. The attention to antiaircraft defense demonstrated the growing concern of aerial bombardment shortly before and during World War I. Remaining tertiary armament was composed of two 47mm Škoda L44 quick-fire guns, two 66mm Škoda L18 marine landing guns, and two Schwarzlose 8mm M 7/12 machine guns. Finally, the Tegetthoffs were equipped with four 53.3cm underwater torpedo tubes: one in the bow, one in the stern, and one on each side. No torpedoes were ever launched in combat by any Austro-Hungarian battleship during the war.

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Gunnery practice with a 7cm gun aboard one of the Tegetthoffs. Fire from these guns was directed by portable telephones; the phone lines ran over the deck on poles, one seen here being held by the sailor to the right of the gun.

Armor and Machinery

The main armor belt of the Tegetthoffs was made of 280mm-thick Krupp cemented steel, which tapered to 150mm toward the bow and stern. The thinner armor did not extend all the way to the ships' ends; strips of armor 110 to 130mm thick were placed between the belt and the ends. The casemate above the belt was protected by 180mm of armor. The sides of the primary turrets, barbettes, and conning towers were covered with 280mm of cemented steel, and the angled sections of the turret roofs had 150mm of armor protection. However, the turret and conning tower roofs were protected by only 60mm regular Krupp steel plate. Two armored decks, 30mm and 48mm thick, covered the ammunition and machinery rooms. The Tegetthoffs retained Popper's *gepanzerter minenboden* underwater protection system and had a 50mm torpedo bulkhead.

Aerial view of *Prinz Eugen*. Note the numerous 7cm Škoda L50 K 10 guns on deck and on top of Turret III.

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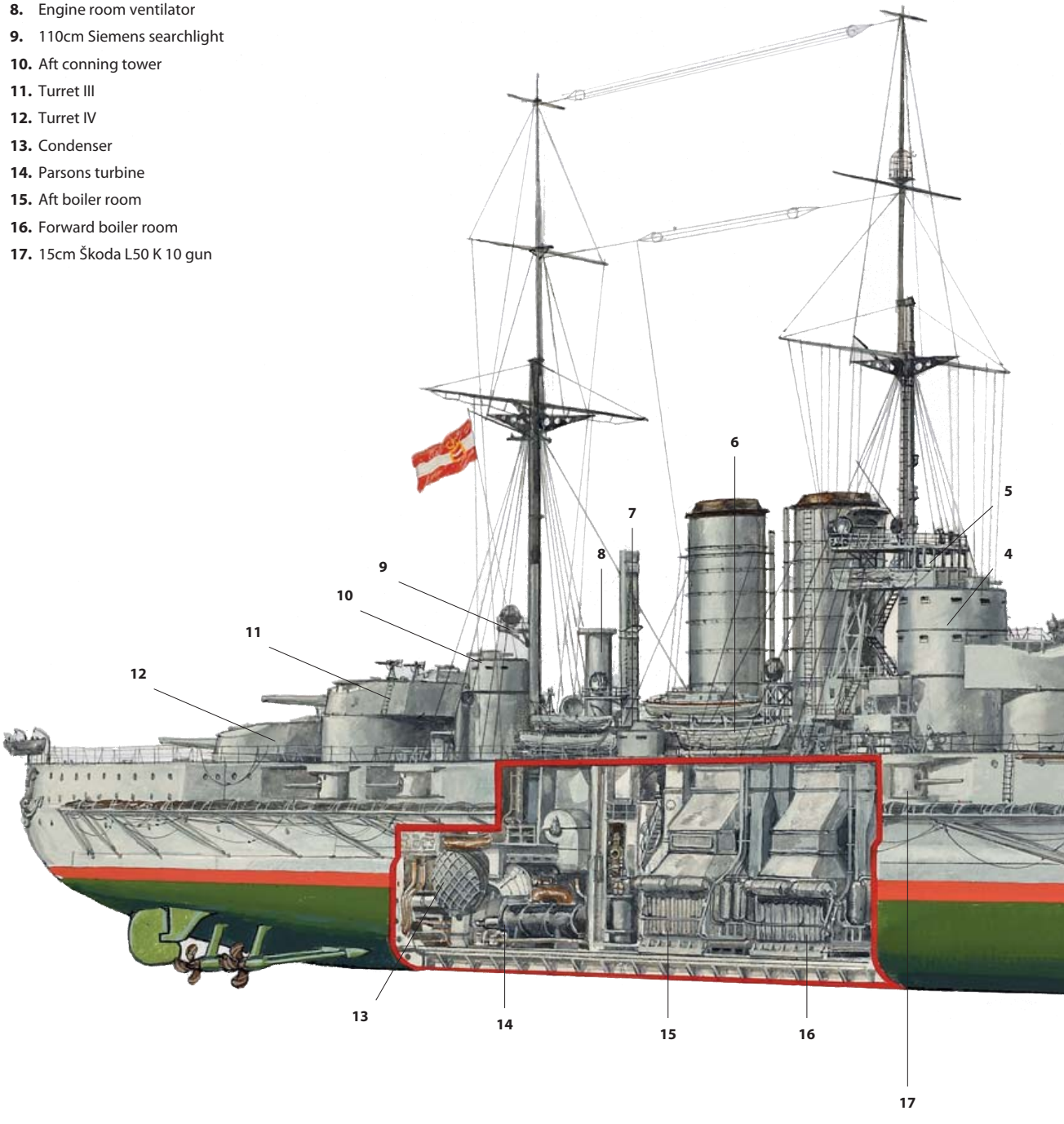
Key

1. 7cm Škoda L50 K 10 TAG gun
2. Turret I
3. Turret II
4. Forward conning tower
5. Bridge
6. 10–13-ton motorboat
7. Aft boat platform
8. Engine room ventilator
9. 110cm Siemens searchlight
10. Aft conning tower
11. Turret III
12. Turret IV
13. Condenser
14. Parsons turbine
15. Aft boiler room
16. Forward boiler room
17. 15cm Škoda L50 K 10 gun



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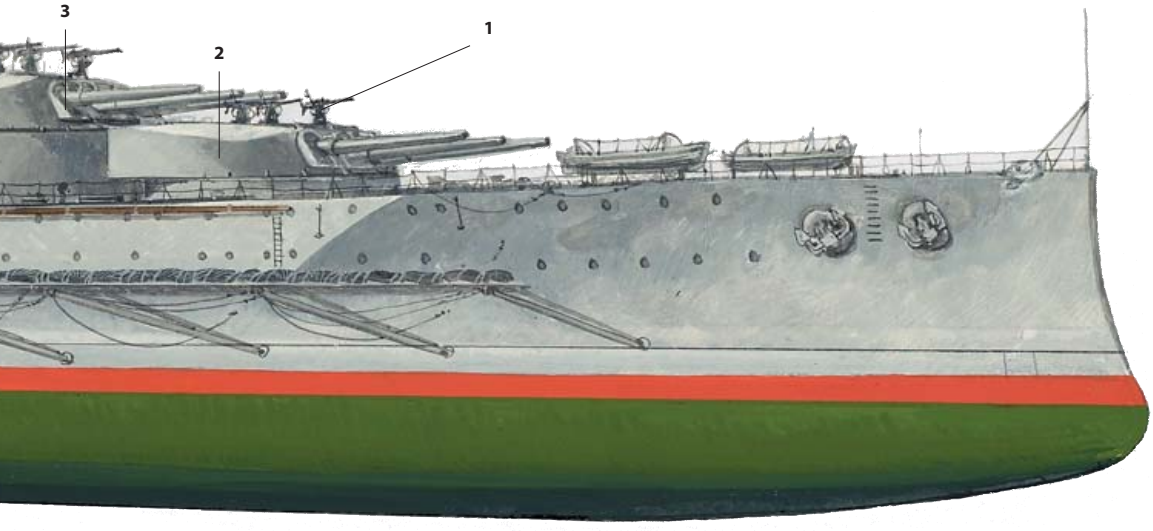
SMS *VIRIBUS UNITIS*

The first of the k.u.k. Kriegsmarine's dreadnoughts, *Viribus Unitis* (although the ships would officially be referred to as the Tegetthoff class), was laid down at STT on July 24, 1910. *Dante Alighieri*, having been laid down on June 6, 1909, was launched on August 20, 1910, while Italy's second dreadnought, *Giulio Cesare*, lead ship of the Conte di Cavour class, was laid down on June 24, 1910 and France laid down its first dreadnought, *Courbet*, on September 1, 1910. *Viribus Unitis*, surprisingly, was the first of all of these dreadnoughts to be completed (December 5, 1912) with *Dante Alighieri* (January 12, 1913), *Courbet* (November 19, 1913), and *Giulio Cesare* (May 14, 1914) following respectively. Thus Austria-Hungary was the first Mediterranean power to put a dreadnought into service, a testament to the growth and efficiency of its naval industries. *Viribus Unitis* was particularly innovative in that it was the first dreadnought to have its primary armament in triple turrets arranged in a super-firing configuration, all along the centerline. The concept of super-firing centerline turrets was borrowed from the United States' first dreadnought, USS *Michigan*, which was armed with eight 30.5cm guns mounted in twin turrets, two fore and two aft. Super-firing centerline triple turrets fore and aft of a ship's superstructure would eventually become the preferred primary armament arrangement for interwar American, Italian, and Japanese battleship designs and was arguably the most efficient primary turret arrangement on a battleship. *Viribus Unitis* was also the first Austro-Hungarian battleship to be powered by steam turbines. STT made an arrangement with the British Parsons Marine Steam Turbine Company to license-produce steam turbines that were first manufactured for the light cruiser *Admiral Spaun*, commissioned in November 1910.

The Tegetthoffs had a double bottom and a 50mm torpedo bulkhead, similar to the underwater protection scheme designed by Popper for the Radetzky class. This would later prove to be an ineffective defense against torpedoes when the *Szent István* was sunk in 1918. The problem with Popper's design was that the wing-passage, an empty space intended to buffer expanding gases from an explosion, between the inner layer of the double bottom and the torpedo bulkhead was not wide enough to fully cushion the blast. The explosions that penetrated the belt as a result also ruptured the torpedo bulkhead. Through extensive testing, the Germans detetermined a proper width for the wing-passage, usually bordered by a coal or oil bunker, that provided enough extra room for the blast of an underwater explosion to be cushioned before seriously damaging the torpedo bulkhead. The German Kaiserliche Marine was the only navy to devote such effort towards underwater protection before World War I. Popper was later criticized for not having provided the ship design with sufficient underwater protection, but budget constraints never allowed for the same level of design testing that other navies could practice. To achieve a similarly effective wing-passage would have meant widening the beam of the design which in turn would have added weight, thus requiring more powerful engines, and so on, which would have been unacceptable given the already inflexible requirements placed upon the design. Furthermore contemporary battleships in other navies fared little better in similar circumstances; e.g. HMS *Audacious* (sunk on October 27, 1914 after striking a single mine) and the French *Danton* (sunk by two torpedoes from the *U-64* on March 19, 1917).



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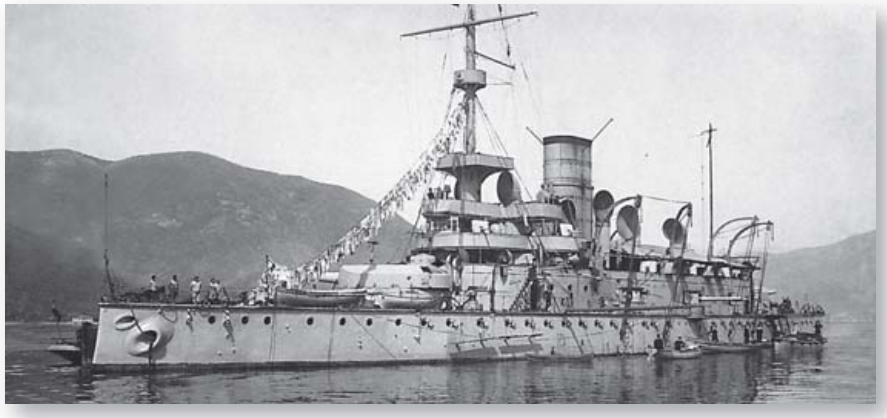
Generating 26,400 indicated horsepower, the AEG-Curtis turbines drove two 4m diameter propellers. With full bunkers holding 2,000 tons of coal, the Tegetthoffs could cruise up to 4,200 nautical miles at 10 knots.

AUSTRO-HUNGARIAN BATTLESHIP ACTIONS IN WORLD WAR I

Securing the Cattaro Naval Base

Ironically, the Austro-Hungarian battleships to see the most activity during the war were the old Monarch-class coastal defense battleships. After Austria-Hungary declared war on Serbia on August 28, 1914, the first nation to come to Serbia's aid was the small principality of Montenegro, which declared war on August 6. Admiral Anton Haus, who had replaced Montecuccoli as Chef der Marinesektion and Marinekommandant, responded immediately by sending cruisers, destroyers, and torpedo boats to bombard and blockade the Montenegrin port of Antivari. King Nicholas of Montenegro ordered his military to commence operations against the Austro-Hungarian naval base in the Bocche di Cattaro on August 8. Cattaro was the k.u.k. Kriegsmarine's southernmost base in the Adriatic. Just across the border stood Mount Lovćen, on whose heights the Montenegrins had placed several batteries of artillery. The Montenegrin guns commenced firing on Austro-Hungarian fortifications on August 8. Only a handful of ships were at Cattaro at the beginning of hostilities, the largest being the old armored cruiser *Kaiser Karl VI*. The Cattaro forts and the *Kaiser Karl VI* fired back at the Mount Lovćen batteries, aided by reconnaissance from navy seaplanes. The Austro-Hungarian ships in the Bocche were reinforced on September 13 when *Monarch*, *Wien*, and *Budapest* arrived from Pola. The twelve 24cm guns of these three old battleships were a welcome addition as they outgunned and outranged the batteries on Lovćen. For the next several weeks, a daily artillery dual took place between the 15cm guns in the Austro-Hungarian forts and the guns on the ships in the Bocche versus the Lovćen batteries.

The k.u.k. Kriegsmarine's campaign against Montenegro took on a new dimension on August 13 when Great Britain and France declared war on Austria-Hungary. The French, realizing that the capture of Cattaro would give their ships a proper fleet base in the Adriatic, landed an artillery detachment of four 15cm and four 12cm naval guns under the command of Capitaine de



Wien off of Gjenovic in the Bocche di Cattaro on July 17, 1916. Although old and slow by the standards of 1914, the Monarchs played useful roles as shore bombardment platforms during the war.

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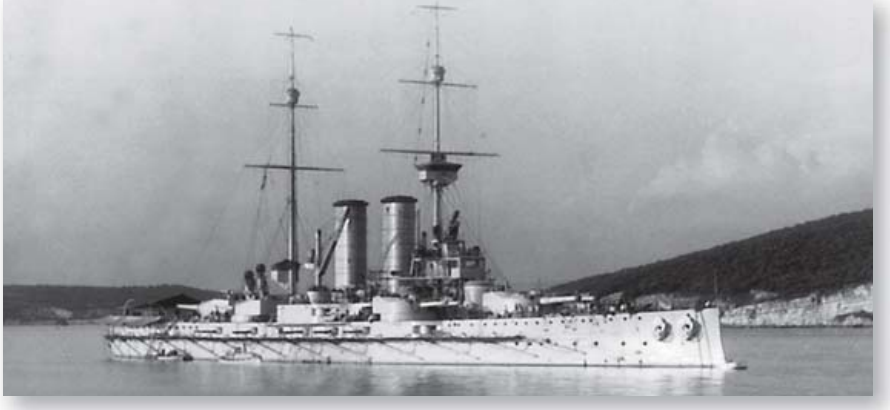
frégate Grellier at Antivari on September 18–19. This detachment would cooperate with the Montenegrin batteries on Mount Lovćen and if the Austrian fortifications around Cattaro could be reduced, further French troops could be sent to assist the Montenegrins in taking the naval base. It took Capitaine Grellier a month to move his guns inland but eventually his batteries were set up and positioned in fortifications on the south side of Lovćen. Observation posts and a radio station were also set up on the mountain by Grellier's troops. On October 19 the French guns opened fire.

A British-manufactured Barr & Stroud rangefinder and an aiming compass, both used for the primary guns, on the starboard bridge wing aboard one of the Erzherzog Karl-class battleships.

To counter the new French batteries on Lovćen, the Austro-Hungarians needed large guns that could fire from out of the range of the enemy's. On October 21 Haus sent the *Radetzky* from Pola to join the Monarchs in the Bocche. With a broadside of four 30.5cm guns and four 24cm guns, *Radetzky* would tip the balance of the ongoing Cattaro bombardment in favor of the Austrians. Nevertheless, the captain was given strict instructions to conserve ammunition in the event that the French or British sent ships toward Cattaro to intervene. The *Radetzky* arrived in the early hours of October 22 and its officers were briefed on the positions of the enemy batteries around Lovćen from photographs taken from Austro-Hungarian seaplanes. In the afternoon *Radetzky* anchored at a point in the Bocche that was 11km away from the enemy batteries, and at 1627 hours its 30.5cm guns opened fire against the batteries at Kuk. *Radetzky*'s shots were accurately ranged through the assistance of a captive balloon stationed at the k.u.k. Ballonabteilung base at Lepetane and from an observation post at Hoher Vermać, commanded by one of the ship's officers.

The French and Montenegrins were forced to concentrate their bombardments on the forts, as the Austro-Hungarian ships in the Bocche were out of range and continued to shell them over the next several days. *Radetzky* returned fire each day, making a number of direct hits against enemy guns and fortified positions. On October 24 one of the French 12cm guns was knocked out but the Allied bombardment of the Cattaro forts continued. Having caught



Radetzky in the Bocche di Cattaro after silencing the French artillery batteries on Mount Lovćen in the fall of 1914.

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on to the Allied strategy to bombard as the sun came up in the morning, *Radetzky* opened fire before sunrise on the morning of the 26th, catching the French and Montenegrins off guard. A number of Allied batteries and fortifications were knocked out during this heavy bombardment, including another French 12cm gun, and by 1000 hours Allied fire from the Lovćen defenses had ceased. On the 27th *Radetzky* sailed closer to shore and blasted Montenegrin positions. Not having guns with the range to shell *Radetzky* and the other battleships in the Bocche, Grellier decided to pull out his remaining batteries 1,000m, conceding defeat. Likewise, the Montenegrins abandoned their fortifications at the Kuk ridge and withdrew further inland. By November the French High Command decided to give up its campaign to neutralize and capture Cattaro. With the threat of protracted Allied bombardment and siege against Cattaro ended, *Radetzky* returned to Pola on December 16, 1914.

When the Austro-Hungarian army was finally able to launch an offensive into Montenegro in early January 1916, *Budapest* was on hand to assist the ground troops against Lovćen's defenses. The battleship's 24cm and 15cm guns pounded Montenegrin positions and on January 10, 1916, the Austro-Hungarian ground forces took the Lovćen pass and the adjacent heights were the French gun position had been. In order for its guns to elevate high enough to hit the Montenegrin lines at the top of the mountain, *Budapest* had to be trimmed 7°! The naval bombardment played a decisive role in breaking the morale of the mountain's defenders and the Montenegrins requested an armistice two days later. The bombardment of Mount Lovćen also highlighted the usefulness of the k.u.k. Kriegsmarine's battleships as mobile heavy artillery batteries, a role they would continue to play in the Adriatic during the war.

The Bombardment of Ancona

One of the primary reasons why Admiral Haus was hesitant to commit his battleships to any operations far from Pola in the early months of the war was his belief that the Italians would not remain neutral in conflict. When Italy declared its neutrality in August 1914, Haus predicted that Italy would not be

Admiral Anton Haus (center) with Archduke Friedrich aboard *Tegetthoff* on February 24, 1916. Haus' strategy from the outset of the war was not to risk his battleships in combat unless absolutely necessary, thus maintaining a "fleet-in-being." As a result, a disproportionate number of Allied warships were tied down in the lower Adriatic to guard against a potential Austro-Hungarian sortie.

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Ancona harbor, prior to the Austro-Hungarian bombardment. (Author's collection)

afraid to strike its traditional enemy if the opportunity presented itself. Italian politicians and military leaders had dreamed of gaining control of the *Italia irrendenta*, or Italian-speaking provinces within the Austro-Hungarian Empire, for decades. This was never a possibility as long as Italy was part of the Triple Alliance but now that it was on the sidelines of a general European war it could act with more freedom. The Italian government under Prime Minister Antonio Salandra decided to pursue a course he defined as *sacro egoismo*, or sacred egotism, bluntly meaning Italy's role in the war would be whatever is best for Italy alone. The Allies were particularly eager to urge for Italian entry in the spring of 1915 as the Italian navy could be used to contain the k.u.k. Kriegsmarine in the Adriatic as more and more British and French battleships were needed for the upcoming Dardanelles Campaign. After witnessing the major Austro-Hungarian defeats in Galicia and Serbia in the winter of 1914–1915 and believing that the Habsburg Empire was on the verge of collapse, the Italian government signed the Treaty of London on April 26, 1915, allying itself with the British and French.

Haus planned to strike the Italians immediately once war was declared. His intended target was naval facilities, roads, railways, and other lines of communication in Italy along the western coast of the Adriatic. If Italian columns moving toward the Isonzo Front were fired on deep in their own territory by Austro-Hungarian battleships, the exuberant early-war morale of

One of the Tegetthoffs sailing into Pola harbor to the cheers of jubilant sailors after returning from the Ancona bombardment on May 24, 1915.

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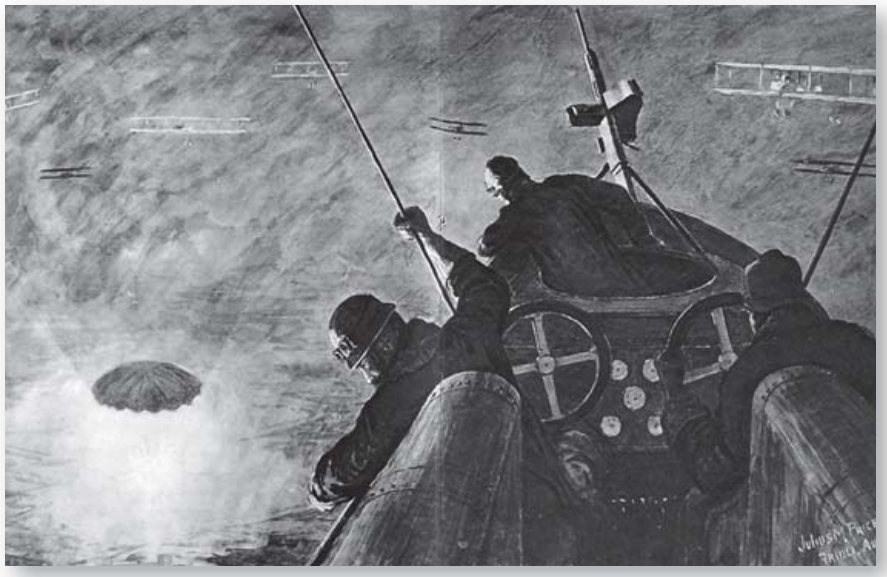

Austro-Hungarian and Italian battleships never met each other in combat at sea during the war but both sides used aircraft to attack and harass each other's ships in port. Here a group of Italian Caproni Ca.3 bombers make a nocturnal attack on Pola in August 1917. (Author's collection)

the Italian Regio Esercito would suffer an immediate blow. Haus had planned for such a move in the event of war with Italy not long after Rome had declared its neutrality. As Rome was preparing to enter the war in May, Haus had already begun sending reconnaissance flights over Venice and the northern Adriatic coast. Learning that there was no major Regia Marina presence in the area was a pleasant surprise and further emboldened Haus to take aggressive action. Assuming that the battleships of the Regia Marina were either at Brindisi or Taranto, Haus sent three scouting groups of light cruisers and destroyers south to keep a lookout. If Italian heavy units in the south attempted to intercept the main Austro-Hungarian fleet, Haus, still eager to avoid a major fleet action, would have ample warning from his scouting groups. These groups set out for their patrol zones on May 19 and Haus ordered that the rest of the ships in Pola keep steam up so that they could depart once hostilities commenced. At 1600 hours on May 23, word reached Pola that the Italians had broken off diplomatic relations with Vienna. Shortly afterwards Italy declared war on Austria-Hungary. Four hours later, amid the cheers of the crews of his ships, Haus, aboard the *Habsburg*, steamed out of Pola with the most powerful Austrian naval force ever to put to sea.

An hour before he left with the bombardment force, Haus dispatched another reconnaissance group, including the cruisers *Szigetvar* and *Saida*, and two destroyers, south to the area between Pedaso and Tajer. Throughout the night the Austrian fleet sailed to the west with small groups breaking off from the main body in order to head for their specific objectives. There was some worry around half past midnight on May 24, when the cruiser *Szigetvar* spotted the Italian airship *Città di Ferrara*, which flew off when fired upon by the destroyer *Velebit*. Would the Italians be alerted to an Austrian presence in the upper Adriatic? Had the element of surprise been lost? Haus pressed on, sending a group of destroyers and torpedo boats ahead of the main body to sweep for mines and reconnoiter the target area. To the delight of the Austrians, Ancona harbor was fully lit as in peacetime and did not appear to be on alert when Haus' reconnaissance force approached. Surprise had been achieved! At 0340 Haus received word from his forward torpedo boats that no mines had been discovered near the harbor entrance. He then personally

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led the battleships of the III Battle Division (Erzherzog Karls) and IV Battle Division (Habsburgs) to a distance of 3,000m from the coast and turned parallel to it. At 0404, as gunnery officers made the final measurements, ranging their targets, Haus gave the word to open fire.

Seconds later, heavy-caliber shells began to rain down throughout Ancona harbor and city. *Habsburg* divided its fire between the Carlo Cipelli battery on the mole, the railway station, and a military camp in the city. *Babenberg* trained its guns against the Cantiere Liguro Anconitano shipyard, the city's powerhouse, and the Cappuccini gun battery. *Árpád*'s guns pounded away against the city's citadel, gasworks, aqueducts, and the mole battery. Behind the ships of the IV Battle Division, *Erzherzog Ferdinand Max* targeted the city's northern barracks, the semaphore and radio stations, and supported the bombardment of the mole battery. *Erzherzog Friedrich* rained fire down on the wharf and the city's southern barracks, while *Erzherzog Karl* supported the fire on the barracks and bombarded the Enrico Cialdini battery. Initially the dreadnoughts of the I Battle Division (*Viribus Unitis*, *Tegetthoff*, and *Prinz Eugen*) and the *Erzherzog Franz Ferdinand* were ordered to hold back further away from the coast. They were to target any land batteries outside of Ancona that might attack the older battleships. Of particular concern was the Alfredo Savio battery outside of the city. Austrian naval intelligence learned that it supposedly housed five 25cm guns and several 12cm or 15cm guns. Haus wanted to make sure that these guns did not pose a risk to his ships so he tasked his most powerful units to deal with this potential threat.

Well after the Habsburgs and the Erzherzog Karls had commenced their bombardments there was no return fire from the Italian land batteries. Haus then ordered his heavier units to concentrate on other targets in the city and harbor. Suddenly 30.5cm shells of the three Tegetthoffs and the *Erzherzog Franz Ferdinand* came raining down on the semaphore station, the radio station, portside warehouses, and fuel storage tanks. As dawn broke on the 24th, Ancona and other points along the Italian east coast were reeling from the effects of the attack and the Austro-Hungarians steamed away. By late morning all of Haus' battleships had safely returned to their buoys at Pola; the Austrians had suffered no losses. The bombardment may not have caused substantial material damage but its psychological impact on the Italians

Crew manning a 7cm Škoda L50 K 10 BAG antiaircraft gun late in the war. As attacks by Italian bombers became more frequent in the last two years of the war, a number of 7cm TAG guns were replaced with the antiaircraft version. Antiaircraft crews were also issued with Italian steel helmets, which were captured in large numbers after the Battle of Caporetto.

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resulted in a delay of troop movements along the coast for three days. Furthermore this dramatic show of force at the outset of the war so stunned Italy's naval leadership that the battleships of the Italian fleet never ventured into the upper Adriatic until the end of the war.

The Cortellazzo Bombardment

On October 24, 1917 the Germans and Austrians launched the 12th Battle of the Isonzo, better known as the Battle of Caporetto, finally breaking the stalemate of the Italian front through the use of hurricane barrages, heavily armed Stosstruppen, and infiltration tactics. In early November the advancing German and Austro-Hungarian armies began to approach the Piave river, almost 60 miles from where the front had been two weeks before, but the momentum of the Central Powers' advance began to wane as their supply lines became overextended and overtaxed. On November 16 *Wien* and *Budapest*, which were stationed in Trieste to serve as guard ships for the port, along with nine torpedo boats and five minesweepers, sailed out of Trieste and headed west. In an effort to assist the forces on the ground, the battleships' objective was to bombard the coastal batteries at Cortellazzo near the mouth of the Piave. At 1035, 9–10km off Cortellazzo, the battleships' 24mm and 15mm guns opened fire. After just a half-hour bombardment most of the Italian guns had been knocked out. Only two coastal guns continued to fire on the battleships but their shots fell short by 200 to 500m. At 1050 the bombardment was interrupted when Italian aircraft arrived overhead; at 1,200 to 1,500m the aircraft dropped their bombs, several narrowly missing the battleships. A second aerial attack was thwarted by the timely arrival of two friendly flying boats that had shadowed the attack force from Trieste.

Wien and *Budapest* continued their bombardment until 1330 when enemy craft were spotted approaching at high speed. Suddenly five Italian Motoscafo Armato Silurante (or MAS) torpedo boats swept in against the battleships. As the 15cm batteries on the battleships turned to meet this new threat, five Italian aircraft were seen on the horizon. Within minutes both *Wien* and *Budapest* were dodging both torpedoes and bombs. The Italians failed to score a single hit and sped away from the scene. At 1430 one of the Austro-Hungarian flying boats which had been spotting for the battleships signaled that the batteries at Cortellazzo had been successfully knocked out. The

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THE BOMBARDMENT OF ANCONA, MAY 23–24, 1915

After receiving word of the Italian declaration of war on the evening of May 23, 1915, Admiral Haus sailed from Pola with the largest Austro-Hungarian naval force to put to sea during the war. His plan was to attack the Italian east coast, hoping to disrupt Italian troop movements to the front and to inflict an early blow against Italian morale. Haus' bombardment force consisted of the 12 dreadnoughts and battleships, the armored cruiser *Sankt Georg*, the cruiser *Novara*, five destroyers, and 29 torpedo boats. Haus conducted a carefully planned attack on a number of targets in this opening engagement and dispatched several strike groups from the main bombardment fleet. *Zrinyi* and two torpedo boats bombarded the railway facilities at Senigallia, temporarily severing the coastal rail line; *Radetzky* and two torpedo boats attacked the railway near the mouth of the Potenza river; *Sankt Georg* and two torpedo boats bombarded Rimini; finally *Novara*, a destroyer, and four torpedo boats attacked the Porto Corsini naval base near Ravenna. The rest of the bombardment force, including *Viribus Unitis*, *Tegetthoff*, *Prinz Eugen*, *Erzherzog Franz Ferdinand*, *Erzherzog Karl*, *Erzherzog Ferdinand Max*, *Erzherzog Friedrich*, *Habsburg*, *Árpád*, *Babenberg*, four destroyers, and 20 torpedo boats, targeted the port and military facilities at Ancona. The bombardments went off without a hitch and all of Haus' battleships were back in Pola before midday on May 24. Here *Babenberg* opens fire on the the Cantiere Liguro Anconitano shipyard in Ancona.

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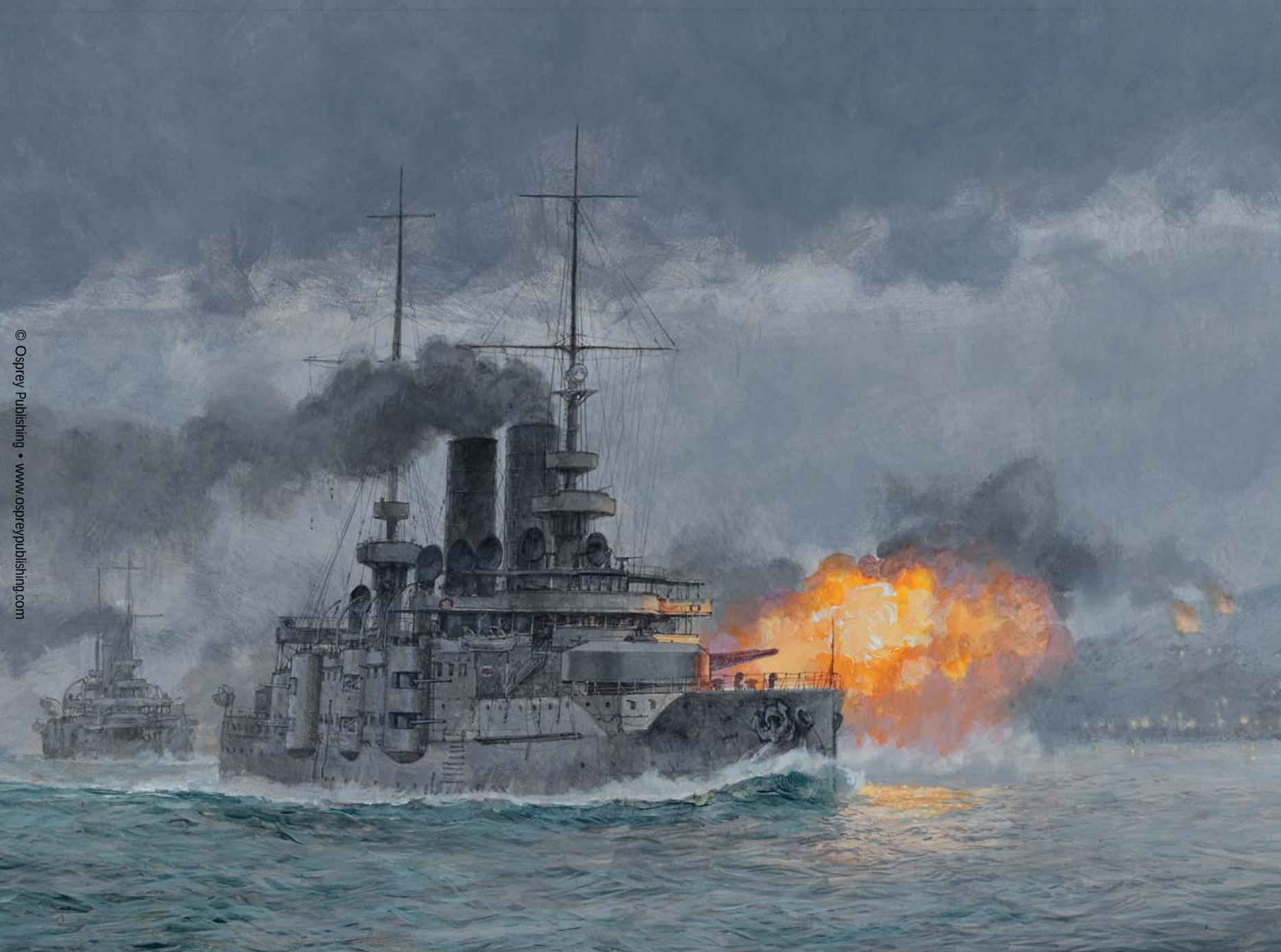

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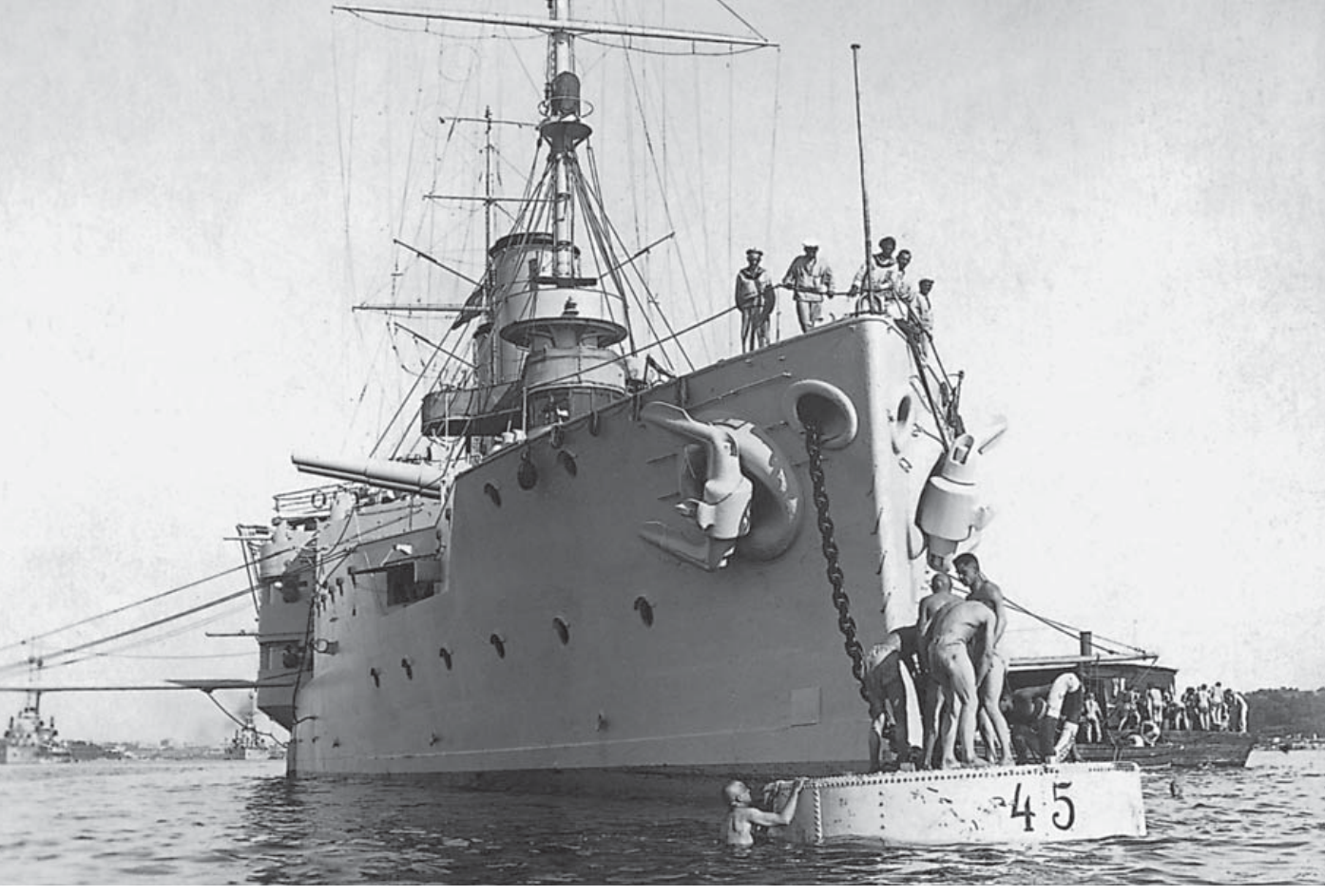

The ships of the Habsburg class were decommissioned in 1913 but reactivated a year later, after the war began. The only major action they participated in was the bombardment of Ancona on May 23–24, 1915. For the rest of the war they mostly remained at anchor at Pola and were decommissioned again in early 1918. Here some of *Habsburg*'s crew pass the time by taking a swim.

Austro-Hungarian force then turned for Trieste and returned to port without difficulty. During the bombardment not a single sailor was lost, and *Wien* and *Budapest* suffered only minor damage from several hits and near-misses from the land batteries. The impact the k.u.k. Kriegsmarine's bombardment had on the Caporetto Campaign was minimal at best. The Central Powers' advance came to a halt only three days later as Austrian and German troops had long overshot their supply lines. To the Regia Marina, however, this attack was yet another embarrassment in which the Austrians were able to attack the Italian coast and get away without suffering loss. Furthermore, the fact that the big guns of the k.u.k. Kriegsmarine were now assisting Austro-Hungarian ground forces caused a great deal of anxiety among Italy's leaders, who demanded naval action. There would be another rendezvous between the *Wien* and *Budapest*, and the Regina Marina's MAS boats.

The Loss of *Wien*

On the evening of December 9, 1917 Italian torpedo boats *9 PN* and *11 PN*, each towing an MAS boat, approached the Gulf of Trieste. The mission of *MAS 9*, commanded by Lt. Cdr. Luigi Rizzo, and *MAS 13*, commanded by Lt. Andrea Ferrarini, was to enter the Bay of Muggia within the gulf and attempt to torpedo *Wien* and *Budapest* at anchor. After the battleships' successful bombardment of Cortellazzo, the Regia Marina was eager to strike back at the k.u.k. Kriegsmarine. The presence of two battleships within such close proximity to the front was also causing a great deal of anxiety for the Italian Regio Esercito and demanded action by the Regia Marina. After the Cortellazzo raid, the Italians sent torpedo boats *9 PN* and *11 PN* on nocturnal

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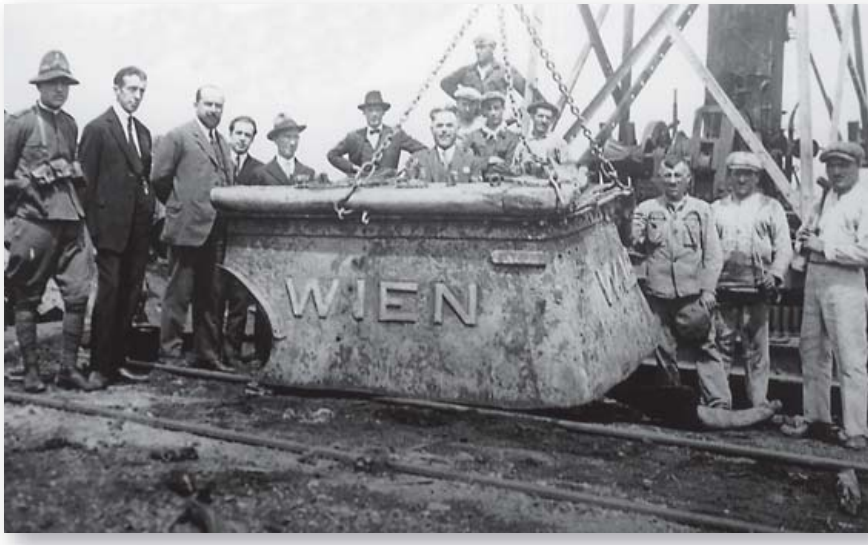
A rather fanciful image of Rizzo's approach into Pola harbor on the night of December 9–10, 1917. The torpedo boat in the foreground is too large to be an MAS boat and the searchlights in the harbor were not active when Rizzo entered the harbor. Nevertheless the image illustrates the nocturnal setting and stealth displayed by the Italians before they made their attack on *Wien*. (Author's collection)

reconnaissance missions into the Gulf of Trieste to reconnoiter the inner harbor defenses in the Bay of Muggia. They took note of the routine sweeps of the spotlights stationed around the harbor, the barrages between the breakwaters, and the movements of armed launches throughout the bay. Having collected enough information about Austro-Hungarian defenses in the bay, Lt. Cdr. Rizzo was confident he could lead an MAS strike. *MAS 9* was equipped with a special powered cutting device to be used to cut through the barrages. The boats also had electric "creeping" motors so that they could stealthily move into the bay without heralding their presence.

After agreeing upon a rendezvous point with the commander of the torpedo boats, Rizzo and Ferrarini slipped their tow lines and held into the Gulf of Trieste. At 2355 hours the MAS boats crept up on the northern end of the main breakwater in the Bay of Muggia. Before proceeding any further Rizzo climbed up on to the breakwater to see if any guards were present. To his



Stern section of the *Wien* recovered from the ship when the wreck was raised in Trieste harbor and scrapped by the Italians in the 1920s. This piece is currently on display at the Museo Storico Navale in Venice.

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delight, not a soul could be seen along the breakwater, and the searchlights around the bay were all turned off. The boats then proceeded to the first barrage. After two hours of quietly cutting through seven barrage lines, they entered the inner harbor. At the same time a searchlight across the bay switched on and for several minutes swept the harbor but then shut off; detection had been avoided. Twenty minutes after entering the harbor the silhouettes of the Austro-Hungarian battleships loomed in the distance. At 0232 on December 10, after plotting the torpedo runs for both boats, Rizzo gave the order to attack. *MAS 9* fired its torpedoes against *Wien*, and *MAS 13* followed suit against *Budapest*. Moments later *Wien* was rocked by two simultaneous explosions. The torpedoes from *MAS 13* missed *Budapest* and exploded harmlessly along the waterfront near the naval air station. After briefly observing the results of his handiwork, Rizzo ordered the boats to withdraw.

Aboard *Wien*, her commander, Fregattenkapitän Leopold Huber Edler von Scheibenhain, was shaken out of his sleep by the explosions. Barely dressed, he shouted at the watch to ask if any enemy vessels had been observed and the answer was that nothing had been seen. *Wien* took a substantial list to starboard, having been hit in the starboard forward engine room. Ashore, the commander of the harbor's defenses, Admiral Alfred von Koudelka, heard the explosion and ordered the searchlights to sweep the bay for intruders. The only things spotted were the boats beginning to circle around the listing *Wien*. Lt. Rizzo had gotten clean away. Huber ordered the engineers to fill the trim tanks but the ship was mortally wounded. With water rushing from compartment to compartment, and the lower deck crews not securing the watertight doors, *Wien* began to roll to starboard only five minutes after being torpedoed. As she capsized Huber and the crew remaining on deck were thrown into the water. They and other survivors clung to floating debris until picked up by boats from *Budapest* and from the naval air station. Forty-six sailors went down with the ship, which came to rest in 16.5m of water on the harbor bottom. Divers were sent to examine the condition of the wreck just

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SZENT ISTVÁN AND *TEGETTHOFF* STEAMING OUT OF POLA THROUGH THE FASANA CHANNEL ON THE EVENING OF JUNE 9, 1918

Hoping to revive the fighting spirit of the crews of the fleet's capital ships, Admiral Horthy planned a large-scale attack against the Otranto Barrage. Horthy intended the attack to begin at sunrise on June 11, which meant that all participating ships would have to be at their respective positions at that time. Cruisers and destroyers would attack the barrage line and enemy shipping off Otranto. Seven battleships would individually, with their respective support vessels, take up station across the southern Adriatic to intercept pursuing Allied cruisers and destroyers. *Erzherzog Ferdinand Max*, *Erzherzog Karl*, and *Erzherzog Friedrich* sailed from Cattaro along with the cruisers and destroyers.

Horthy left Pola in the afternoon of June 8 aboard *Viribus Unitis* accompanied by *Prinz Eugen*. As a ruse, it was said that the ships were sailing out for gunnery practice in the Fasana Channel. Once night fell, the ships moved along the coast until they reached Tajer Bay, where they stayed throughout the daylight hours of June 9. Horthy wanted to conceal the movement of his dreadnoughts as much as possible. *Viribus Unitis* and *Prinz Eugen* continued their southward course for Dubrovnik that night. *Szent István* and *Tegetthoff* departed from Pola during the evening of the 9th, escorted by a Huszár-class destroyer and nine torpedo boats. Outside of Pola, *Szent István* experienced trouble with one of its turbines and the force had to slow to 12 knots. The ship's engineers eventually were able to increase its speed to 14 knots but *Szent István* and *Tegetthoff* were running behind schedule to reach a protected anchorage before dawn. It was at this time that the Austro-Hungarian dreadnoughts by pure chance happened to sail within sight of two Italian MAS boats.

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Kaiser Karl I aboard *Viribus Unitis* with Admiral Maximilian Njegovan on June 3, 1917. Njegovan replaced Admiral Haus as Marinekommandant when the latter passed away aboard *Viribus Unitis* on February 8, 1917. Karl was eager to see his navy take a more proactive role in the war but Njegovan clung to maintaining a "fleet-in-being." Following the Cattaro mutiny in February 1918, Karl replaced Njegovan with the energetic Miklós Horthy de Nagybánya as Flottenkommandant in the hope that Horthy would act aggressively with the fleet.

days after the sinking but, as almost half of the ship was buried in the muddy bottom, salvage was deemed too difficult to undertake. Thus a great deal of Rizzo's stunning success against the *Wien* is ironically owed to the uncharacteristic Austro-Hungarian negligence regarding the protection of their capital ships, especially neglecting to dispatch motor launches to patrol their ships that night. It was a disaster that could have easily been prevented and did not help the already eroding level of morale within the ranks of the k.u.k. Kriegsmarine.

The Loss of *Szent István*

The last major operation involving Austro-Hungarian battleships in World War I has its roots in a naval mutiny that broke out aboard several of the larger ships stationed at Cattaro on February 1, 1918. On February 3 the three Erzherzog-class battleships sailed into the Bocche and demanded the surrender of the mutineers, who were also threatened with bombardment from the coastal batteries and other ships in the port that had remained loyal. The mutiny ended with over 800 sailors dismissed from the service. Some of the blame for the poor morale throughout the fleet due to months of inaction fell upon Flottenkommandant Admiral Maximilian Njegovan, who was relieved of duty after the mutiny. Linienschiffskapitän Miklós Horthy de Nagybanya was selected personally by Kaiser Karl I to replace Njegovan, primarily because of his proven aggressive spirit. Horthy, commander of the cruiser *Novara*, had led a successful cruiser raid against the Otranto Barrage in May 1917. If anyone could instill an aggressive and driving spirit into the fleet, Kaiser Karl believed that Horthy was the man for the job.

Horthy had an arduous task before him. Not only did he have to address the poor morale through the navy but he also had a smaller battle fleet to command than had his predecessors. *Budapest* was in shipyard hands, having a Škoda 380mm L/17 howitzer mounted in place of her forward main turret. *Monarch* and all of the Habsburg-class battleships had been decommissioned, freeing their crews for use in the growing U-boat and naval aviation arms. The ships of the Erzherzog Karl class had been assigned to Cattaro as guard ships to take the armored cruisers that were decommissioned in the wake of the mutiny. This left the ships of the Radetzky and Tegetthoff classes as the core of the battle fleet stationed at Pola. It took Horthy some time to become acquainted with managing fleet operations so nothing large scale was immediately planned, but the new commander felt more action was critical to raise morale throughout the fleet. By late spring 1918 Horthy was ready to undertake an aggressive action with his capital ships, with the same élan with which he had led his cruisers in battle the previous year. This would be the first major operation for the fleet's battleships since the bombardment of Ancona in 1915. On June 8, 1918 Horthy steamed out of Pola with *Viribus Unitis* and

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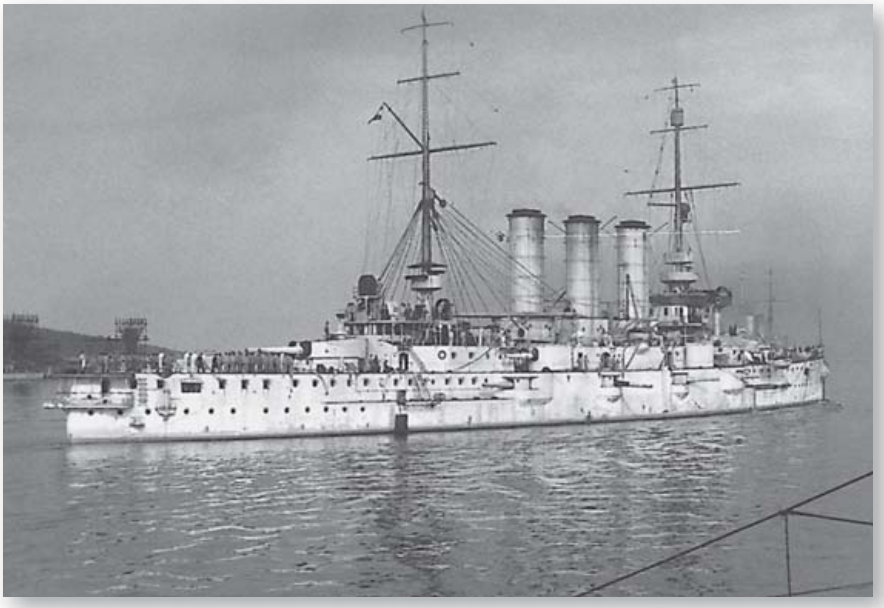

A stern view of *Erzherzog Friedrich* sailing out of Pola with the port's coaling station in the background. The Erzherzog Karl-class battleships were based at Pola for most of the war until they were sent to the Bocche di Cattaro in February 1918 to help put down a mutiny.

Prinz Eugen, followed a day later by *Szent István* and *Tegetthoff*. After rendezvousing with the Erzherzog Karls out of Cattaro, Horthy planned to lay in ambush with his battleships north of the Otranto Barrage after several of his cruisers and destroyers made a hit-and-run raid against the line and enemy shipping. He hoped to welcome pursuing Allied cruisers into the waiting embrace of his battleships.

On the opposite side of the Adriatic in the early evening hours of the 9th, the Italian torpedo boats *15 OS* and *18 OS* left Ancona, each towing an MAS boat, *MAS 15* and *MAS 21*. The MAS boats had orders to search throughout the night for targets off the Dalmatian coast along the main Austro-Hungarian supply route between Fiume and Cattaro. In command of the MAS boats was Lt. Luigi Rizzo, who was eager to see action. The evening patrol passed without incident. Shortly before 0300 on the 10th, Rizzo ordered his MAS boats to proceed to the rendezvous point with the torpedo boats. At 0315 Rizzo spotted a rising cloud of smoke astern and ordered his boats to reverse course to investigate. What he found greatly excited him. Rounding Sansego Island at a leisurely 14 knots were two Austro-Hungarian dreadnoughts and their escorts. Rizzo, aboard *MAS 15*, ordered full throttle and the boats headed for the dreadnoughts. At 0325 the MAS boats sped through the Austro-Hungarian escort screen and fired their torpedoes. Aboard *Szent István* the sea seemed calm; visibility was good except to the west, where the view was hampered by a slight haze. At 0330 a muffled explosion was felt along the starboard amidships of the dreadnought, followed by a second only moments later. The lookouts quickly scanned the horizon for enemy vessels but nothing could be seen. They then saw torpedo boat *TB 76* altering course and firing shots from its bow gun. Beyond the water spouts of *TB 76*'s shots they spotted two MAS boats speeding off in the distance. The *Szent István* had been struck by two torpedoes from Rizzo's *MAS 15*. Within minutes the MAS boats dropped depth charges to ward off *TB 76* and soon accelerated out of range of the torpedo boat's guns. Rizzo had just earned himself a second *medaglia d'oro al valor militare*.

Shortly after the torpedoes struck, Linienschiffskapitän Heinrich Seitz

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Lohner flying boat *L100* flying over *Viribus Unitis*. Flying boats of the k.u.k. Seefliegerkorps frequently flew reconnaissance for battleships when they put to sea.

ordered the ship's turbines stopped. The aft boiler room had flooded and water began to leak into the forward boiler room after the explosions had ruptured the main bulkhead between the two rooms. A list of 10° to starboard developed but was brought back to 7° through counter-flooding. Captain Seitz signaled the *Tegetthoff* to prepare to take the crippled *Szent István* in tow, but *Tegetthoff* had broken away at full speed on a zigzag course. The torpedoes fired from *MAS 21* missed the dreadnought, causing her captain to order evasive action. There were several false sightings of periscopes by the jittery lookouts, followed by shots fired into the empty sea. This frantic search for phantom submarines went on for over an hour. After counter-flooding, Captain Seitz ordered *Szent István*'s turbines back on and, creeping along at 4.5 knots, set a course for Brgulje, on the coast. In the lower decks the damage-control teams were having difficulties containing the flooding. Water began leaking into the forward boiler room and adjacent ammunition stores. Bulkheads were failing to hold the force of the water to the extent that rivets were beginning to shoot out of their holes. Attempts to shore up the leaks with collision mats and hammocks failed and eventually the forward boiler room flooded. Soon all of the boilers were out except for two on the port side and these did not generate enough power to keep the pumps working. Again the dreadnought came to a halt. As a result of ineffective underwater protection, poorly constructed bulkheads (most likely due to the Danubius yard's inexperience in building large warships), and the loss of the pumps, water continued to spread to other compartments.

At 0520, when *Tegetthoff* had returned from its wild goose chase, *Szent István* signaled its sister ship to arrange a tow as quickly as possible. Her list to starboard continued to increase and eventually the casemated secondary batteries slipped below the waterline. The crews worked furiously to prepare a tow but at 0538 *Szent István* began to lurch to starboard and the tow line had to be cut. The order to abandon ship was given as *Tegetthoff* backed away. The crew lined up in an orderly fashion on the sloping deck, some jumping into the water. At 0605 *Szent István* made its final death roll and

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Szent István rolling over at 0605 after being struck by two torpedoes from *MAS 15* at 0325 on June 10, 1918.

capsized. Captain Seitz and the ship's senior officers were thrown off the bridge and a number of sailors scurried on to the keel as the ship rolled over, many injuring themselves on the sharp barnacles on the hull. At 0612 the dreadnought slipped beneath the waves. Four officers and 85 sailors were killed by the explosions or went down with the ship and the rest of the ship's crew were rescued by *Tegetthoff* and the escorts. When word of the attack on *Szent István* reached Admiral Horthy, he decided to abandon the operation against the Otranto Barrage, the element of surprise having been lost. Not knowing that Rizzo had happened upon *Szent István* by pure chance, Horthy was convinced at the time that the Italians knew of his movements and believed that they had dispatched submarines and MAS boats to attack his forces. By the morning of June 11, Horthy's remaining dreadnoughts had safely returned to Pola. Thus ended the last major fleet action conducted by the k.u.k. Kriegsmarine.

The Last Days of Austria-Hungary's Battleships

On October 29, 1918, amid the collapse of the Austro-Hungarian Empire, the formation of the State of Slovenes, Croats and Serbs (made up of the South Slav territories) was declared in Agram, not far from Pola. At 1645 on October 31, 1918, Admiral Horthy, aboard *Viribus Unitis* and under instructions from Kaiser Karl, officially passed control of the remaining ships of the k.u.k. Kriegsmarine to a delegation of the South Slav National Council. Moments later the red, white, and blue flag of the Croatians was raised aboard the former imperial flagship and soon aboard all the other ships in Pola. Captain Janko Vuković de Podkapelski of *Viribus Unitis* was appointed Rear-Admiral and made commander of the new South Slav fleet. The mood aboard the ships was ecstatic and celebrations broke out throughout the evening. At the same time across the Adriatic tempers raged among the Italian admiralty. They Italian High Command had been following the rapidly changing political situation within Austria-Hungary for several days and had learned through intercepted wireless traffic of the handover of the Austro-Hungarian fleet to the South Slav National Council. Ever since the prospect of an Allied victory

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Admiral Miklós Horthy de Nagybanya, the last Flottenkommandant of the k.u.k. Kriegsmarine, who led the last major Austro-Hungarian fleet action on June 9–10, 1918. (Author's collection)

became inevitable in the fall of 1918, Italian politicians and admirals had been coveting the Austrian littoral and the facilities and ships of the k.u.k. Kriegsmarine. They were not about to let them fall into the hands of a new upstart state.

At 1830 on October 31, the Italian torpedo boat *65 PN*, carrying a new underwater device, left Venice, towing behind it the smaller *MAS 95*. This underwater device, called a *mignatta* (leech), was a dummy torpedo that had been roughly converted into a midget submarine with seats for two divers and steering controls. As the Italians approached Brioni Island, *MAS 95*, under the command of Constanzo Ciano, they sped off toward Pola harbor with the *mignatta* in tow. At 2213 *MAS 95* came to within 600m of the harbor entrance. Two frogmen in full diving suits, officers Raffaele Rossetti and Raffaele Paolucci, climbed aboard the *mignatta* and set off. With some difficulty they managed to make their way through the anti-submarine nets and entered the inner harbor. Navigation through the inner harbor was easy for the frogmen as ships' lights and the harbor lights had been turned on for the first time since the beginning of the war.

At around 0430 on November 1, the Rossetti and Paolucci approached one of the Tegetthoff-class battleships in the harbor. On the bow of the *mignatta* were two explosive charges They were attached to the hull of the warship with magnets that were tied via a 6m length of rope to the explosives. The 6m distance between the explosives and the hull was meant to amplify the power of the explosion. After placing one of the charges on the battleship's hull, they set the timer and began moving away. Suddenly one the battleship's spotlights beamed down on them, the watch having spotted the wake of the *mignatta*. Rossetti and Paolucci quickly set the timer on the second charge and set the *mignatta* speeding away; it traveled across the harbor until it hit a mole, exactly under where the liner *Wien* was moored. The two Italians were brought aboard the battleship, which they learned was *Viribus Unitis*, and questioned. They warned Admiral Vuković of the impending explosion and the order to abandon ship was given. Around 0620 a dull explosion shook *Viribus Unitis* and the ship took on a 20º list only moments later. Shortly after 0630 she rolled over and sank, taking around 400 crew with her, many of whom were still asleep below deck, exhausted from the evening's celebrations; Admiral Vuković stayed aboard and went down with the ship. While boats were in the process of picking survivors from *Viribus Unitis*, the harbor was rocked by a second explosion. The charge still attached to the *mignatta* detonated under the *Wien*, sinking the liner.

Two days after the sinking of *Viribus Unitis*, an armistice was signed between the Italians and the Austro-Hungarian commanders on the Isonzo front. The armistice came into effect on November 4 and the Italians marched into the Austrian littoral, occupying Pola on November 5. As many of the former Austro-Hungarian warships in Pola were undermanned, their South

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Viribus Unitis listing to starboard after the explosion of the Italian mine.

Slav officers and crews began to hand them over to the Italians beginning on November 10, but not before two battleships made a getaway: on November 7, in a defiant move, the officers and sailors aboard *Radetzky* raised steam and headed out of the harbor, followed by *Zrinyi* three days later. Just as *Zrinyi* steamed past the breakwater, lookouts spotted Italian vessels approaching. The ship's commander, Korvettenkapitän Marijan Polic, ordered the American flag raised and *Zrinyi* boldly sailed past the puzzled Italians. The battleships sailed along the coastline until they reached Castelli Bay near Spalato, where a small group of American submarine chasers was stationed. Polic surrendered his force to American Lt. E. E. Spafford, preferring to give the battleships to the Americans rather than willingly handing them over to the Italians. Thereafter they were commissioned into the United States Navy as USS *Radetzky* and USS *Zrinyi*, both manned by coastguard crews taken from the submarine chasers.

Although the Treaty of St. Germain-en-Laye was signed between the Allies and the Republic of Austria on September 10, 1919, the ultimate fate of the battleships of the former k.u.k. Kriegsmarine was not decided until the following year. *Monarch*, *Budapest*, *Habsburg*, *Árpád*, *Babenberg*, and *Erzherzog Ferdinand Max* were ceded to Great Britain and all were sold for scrapping in Italy. *Erzherzog Karl*, *Erzherzog Friedrich*, and *Prinz Eugen* were awarded to France. The two Erzherzogs were scrapped but *Prinz Eugen* was used by the French navy to test aerial bombs and underwater explosives. She was finally sunk as a gunnery target in June 1922. Finally, *Erzherzog Franz Ferdinand*, *Radetzky*, *Zrinyi*, and *Tegetthoff* were ceded to Italy.

With their territorial ambitions in the Balkans, the Italian leadership adamantly refused to consider the possibility of a new South Slav state possessing a navy of any strength. Ultimately the Kingdom of the Serbs, Croats, and Slovenes would only inherit a dozen old Austro-Hungarian torpedo boats. The Regia Marina also clamored for the most modern

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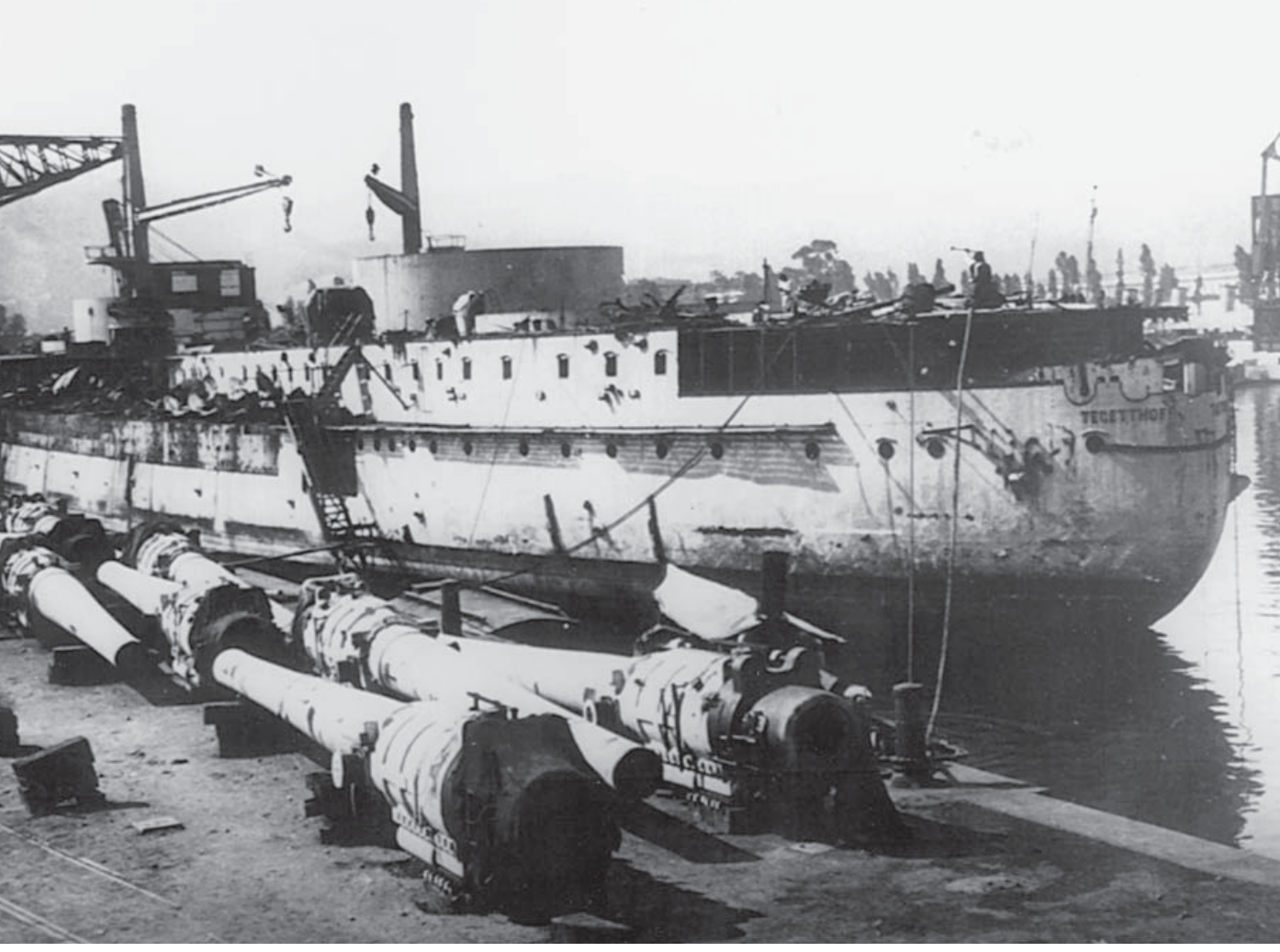

Tegetthoff in Italy with its guns removed prior to being scrapped. The Italians used her 30.5cm guns in coastal artillery batteries during World War II.

battleships of the former k.u.k. Kriegsmarine, claiming them as replacements for Italian battleships lost during the war. It received them but they did not survive under the Italian ensign for long. They were all eventually scrapped in the mid-1920s in accordance with the terms of the Washington Naval Treaty of 1922. In a pompous victory display, the Regia Marina held a grand review off Venice in March 1919 with *Tegetthoff* and *Erzherzog Franz Ferdinand* sailing under Italian flags, like foreign captives marched through the streets in Roman triumph. However, this spectacle could not hide the fact that these battleships, and the others of the k.u.k. Kriegsmarine, had maintained control of the Adriatic for the duration of the war merely as a "fleet-in-being," exactly as Austro-Hungarian admirals had planned.

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PUBLISHING

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First published in Great Britain in 2012 by Osprey Publishing,
Midland House, West Way, Botley, Oxford, OX2 0PH, UK
44–02 23rd St, Suite 219, Long Island City, NY 11101, USA
E-mail: info@ospreypublishing.com
Osprey Publishing is part of the Osprey Group

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A CIP catalog record for this book is available from the British Library

Print ISBN: 978 1 84908 688 2
PDF e-book ISBN: 978 1 84908 689 9
EPUB e-book ISBN: 978 1 78096 897 1

Index by Zoe Ross
Typeset in Sabon and Myriad Pro
Originated by PDQ Media, Bungay, UK
Printed in China through Worldprint Ltd.

12 13 14 15 16 10 9 8 7 6 5 4 3 2 1

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ACKNOWLEDGEMENTS

The author wishes to thank Andrew Wilkie for sharing his artwork of the *Viribus Unitis*. Thanks go to Dr. Peter Enne and the staff of the Heeresgeschichtliches Museum in Vienna for their assistance during the author's research visit. Finally, the author would like to especially thank Herr Erwin Sieche for the use of part of his photo collection and for his help and hospitality when the author was in Vienna.

AUTHOR'S NOTE

Unless otherwise noted, photos are from the Baumgartner/Sieche Collection.

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